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USSR Report

AGRICULTURE

No. 1222

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LIVESTOCK FEED PROCUREMENT

WAYS TO INCREASE FEED PROTEIN REVIEWED

Moscow SEL'SKAYA ZHIZN' in Russian 30 Jan 80 p 2

[Article by A. Suzinov, VASKhNIL academician; N. Chekalin, doctor of biological sciences; and G. Lavrinenko, candidate of biological sciences: "Feed Protein Reserves into Action"]

[Text] Increasing protein production in every way possible by expanding the area sown and the yield of crops rich in protein is an urgent task in agricultural production. The November Plenum of the CPSU Central Committee emphasized that the country has every possibility of solving the feed protein problem much more rapidly.

In publishing this article by VASKhNIL scientists the newspaper SEL'SKAYA ZHIZN' begins a new column "Feed Protein Reserves into Action!" The editors invite the directors of kolkhozes, sovkhozes, and interfarm enterprises, scientists, specialists, party and soviet workers, and agricultural workers to express their opinions on questions dealt with in the article and to present their proposals for successfully solving the problem of protein and creating a valuable feed base for animal husbandry.

Expand the Area Sown, Increase Yields

Quite recently, 10 to 15 years ago, only scientists talked about a feed protein shortage; now this is one of the urgent problems of contemporary agriculture.

A deficiency in protein elements in rations leads not only to a shortage of animal husbandry products, but it also brings about a considerable overexpenditure of feeds--up to 30 to 35 percent in beef production and 20 to 25 percent in pork production.

Precisely what brings about so significant a deficiency in feed protein? There are many causes. First, feed crop productivity is low (about 20 quintals of feed units per hectare), as is productivity on natural fodder lands. Second, losses of nutrients are quite considerable in the process of feed procurement and storage (up to 30 percent and more). Third, the increase in feed production to date has been achieved mainly thanks to an expansion in the area sown to silage crops mainly corn in pure form and annual grasses which contain little protein. Fourth, herbacious crop grain, which is unbalanced in protein, is used as feed for cattle and poultry in significant quantities.

We must also point out that the protein content in the grain and vegetation mass of grain crops has declined recently. This is explained by the fact that the loss of nutrients from the harvest is not made up by adequate applications of organic and mineral fertilizers, primarily nitrogen.

The problem of the deficiency in the rations of highly valuable protein feed of animal origin--fish and meat-bone meal, skimmed milk, as well as oil cake and groats--is especially acute.

The protein problem must not be solved simply by increasing the yield of agricultural crops. The situation can be improved considerably if we expand the area sown to high-protein crops, especially those which serve as sources of valuable protein additives in the production of mixed feed--legumes, perennial leguminous grasses, sunflowers, and others.

The grain of leguminous crops is marked by a significantly higher protein content than the grain of herbacious crops. According to data over many years from the USSR State Crop-Testing System, such crops as peas, lupine, soybeans, and feed beans assure on the average a protein yield of 550 to 900 kilograms per hectare depending on the crop. To obtain mixed feeds balanced in protein and certain indispensible amino acids they must be composed of no less than 12.5 percent grain from legumes, still the demand for them is being met by less than 3 percent.

In this connection an increase in the production of such crops as corn, barley, and oats must obligatorily be accompanied by a corresponding increase in the production of leguminous crops as sources of the deficient amount of protein, primarily for hogs and poultry.

Peas, Soybeans, Lupine, and Other Crops

Peas are the main leguminous crop in our country. They occupy about 4 million hectares, and in a number of republics and oblasts where modern technology for raising them has been mastered, the yields are good. For example, on an area of just a little less than one million hectares the Ukraine obtained 26.6 quintals of peas in 1976 and 25.9 quintals in 1977 with an average yield of 27.9 quintals of grain crops per hectare. A yield of 30 to 35 quintals of peas is not rare in various zones of the country.

In recent years the country's scientific institutions have created varieties of peas with a potential yield of 50 or more quintals, including seeds which do not shatter during the splitting of the pods; this significantly reduces crop losses, especially in damp weather. The first variety of this type, Neosypayushchiysya-1, has already been regionalized in 49 oblasts, krays, and republics.

However, we still have serious work to do to improve the selection of varieties of peas. The goal is to increase the ratio of seed propagation by reducing their size, increasing adaptability of the varieties to mechanized harvesting, and stabilizing and increasing their drought resistance.

It is possible to achieve a significant increase in grain production from peas only by introducing modern mechanized technologies in raising peas in each soil and climatic zone, and organizing industrial seed raising with a corresponding increase in the area sown.

If we expand the area sown to peas [illegible] to [illegible] million hectares, the country can obtain [illegible] to [illegible] million tons of high protein grain, or about [illegible] million tons of assimilable protein.

In world-wide practice in solving the protein problem prime importance is attached to soybeans, the seeds of which contain 40 or more percent protein and 18 percent fat. In the Soviet Union there are zones with sufficiently favorable conditions for soybean production and for the obtaining of high stable yields.

At the present time over 90 percent of the area sown to soybeans is located in the Far East where much experience in raising it has been accumulated. For example, on the experimental farm of the All-Union Scientific Research Institute for Soybeans (Amurskaya Oblast) by introducing modern industrial technology for raising, harvesting, and processing the grain after the harvest in the last 5 years the harvest was [illegible] to 16 quintals from each of [illegible],200 hectares. Converted into protein this corresponds to a yield of 40 quintals of wheat. The Partizan Sovkhoz of this same oblast harvests an average of [illegible] to 14 quintals of grain from each of [illegible],000 hectares of area sown to soybeans, while Tambovskiy Rayon harvests 10 to [illegible] quintals from an area of 56,000 hectares. This means that the soybean yield in the Far East can be increased one and a half to two times by the mass introduction of modern mechanized technology for raising it.

However, despite a number of measures, the production of this valuable crop is increasing slowly. Up to this time two to three times less fertilizer than the recommended norm is being applied to soy crops, and herbicides are being used on 10 to 15 percent of the area planted. The soil is being poorly limed, and a system of machines for complex mechanization of soybean raising is lacking.

There is no opportunity to expand soy acreage in the Far East substantially. In this connection an increase in its yield is the main way to develop soy production in the Far East.

A huge new base for the commodity production of soybeans can be organized in the European part of the country, mainly on irrigated land. There is land suitable for this in the southern Ukraine, in Moldavia, the North Caucasus, the Povolzh've, as well as in South Kazakhstan and the Uzbek, Kirgiz, and Azerbaijan SSRs. Part of the area sown (about 300,000 hectares) can be located in these regions and on unirrigated land.

[illegible] of leading farms in the Ukraine and other regions demonstrate the great opportunities for raising high yields of soy on irrigated land, and in the forest-steppe zone and on unirrigated land. In 1979 the Ukraine Kolkhoz in Krasnogvardeyskiy Rayon, Krymskaya Oblast, obtained an average of [illegible] quintals of grain from each of 500 hectares under irrigation sown to soy. On this farm they raise up to 20 to 22 quintals of soybeans on areas sown after winter wheat has been reaped.

In the country as a whole the acreage of soybeans sown for grain can reach [illegible] million hectares in the very near future, with full provision of collectives with specialized equipment and fertilizers, the cultivation of irrigated land, and organization of accelerated reproduction of new, fast maturing, high-yield varieties. Next by developing new varieties, accumulating experience in raising, harvesting, and processing soy, and also establishing the necessary material and technical base it will be possible to set a goal of expanding the area sown to this crop up to [illegible] or more million hectares with an average yield of 20 to 22 quintals. But there are great difficulties along the way. It will require considerable capital investments and the efforts of scientists, agricultural specialists, and party and soviet organs to surmount them.

Supplement Protein Reserves

Lupine also plays an important role in increasing reserves of feed protein. Its green mass contains 16 to 18 percent valuable protein, while its seed contains up to [illegible] percent. In recent years the country's scientific institutions have created a number of varieties possessing valuable economic properties. The following varieties have received the widest distribution in production: white lupine--Kievskiy mutant; yellow--Bystrorastushchiy-4, Akademicheskiy-1, and Rannespelyy; and narrow-leaf--Nemchinovskiy-846. New varieties of white lupine (Gorizont, Dnepr, and others) are capable of producing up to 35 to 40 quintals of seed per hectare.

The biological properties of modern varieties and the recommended methods of agricultural practices make it possible to raise lupine in zones of the Polesye and forest-steppe regions of the Ukrainian SSR, in the Nonchernozem zone of the RSFSR, in Belorussia, the Baltic area, and regions of the humid subtropics to obtain forage grain and green mass from pure and mixed plantings, in occupied fallow, and also as an afterharvest and hay crop. White lupine is promising for the majority of oblasts in the central Chernozem region.

At the same time inadequate attention has been paid to raising this valuable crop until now. Moreover, the gross harvest of lupine grain has declined, in 1979 it totaled [illegible],000 tons. The main factors impeding the development of lupine cultivation are its late maturity, poor resistance to fusarium wilt and other diseases, poorly organized seed growing, and difficulties in drying the seeds and bringing them up to sowing condition.

To guarantee maximum development of lupine production a number of organizational measures should be adopted: acreage should be expanded considerably (two or three times), recommendations for expanding sowing in crop rotation should be strictly adhered to where the mass development of fusarium will be observed, work to develop new varieties should be stepped up, and the construction of plants to clean, dry, and store seed should be organized.

Peas, beans and lupine are by no means the only high-protein crops in our country. Vetch, peavine, chick peas, beans and other crops can be very important. For purposes of stimulating production of leguminous crops it would be expedient to introduce into practice a single procedure for the country for planning, accounting, procuring, and distributing through channels of demands the product of the grain farm separately according to the following four groups of crops: cereals, legumes (peas, feed beans, beans, lentils, white lupine, peavine and chick peas), groats (buckwheat, millet and rice), and annual legumes for seed (spring and winter vetch, yellow and narrow-leaf lupine, fodder hay peas, and seradella).

It is also important to step up the construction and starting up of plant and shops for the production of herbicides like prometrin, linuron, and others, which are effective on areas sown to leguminous crops and to increase the production and scale of use of nitragin, which is currently being used on only [illegible] percent of the area sown.

All these measures must be aimed at the achievement of a volume of leguminous crop output which in their ratio to the structure of grain alloted for feed purposes are to total no less than 10 to 12 percent (16 million tons). The most valuable of the perennial grasses is alfalfa, the green mass and hay from which in protein content ([illegible] to 19 percent) and assimilability surpass not only all herbaceous but also leguminous grasses like clover and sainfoin, equaling concentrated feeds in this indicator.

The decree of the CPSU Central Committee and USSR Council of Ministers "On Measures to Increase Production and Improve the Quality of Feed" provides for an increase in the very near future of the cutting area of alfalfa. This will make it possible to obtain throughout the country as a whole an additional quantity of protein in a favorable combination with other nutrients.

However, we still note here a number of unsolved problems. Insufficient development of the production of alfalfa is accompanied by extremely unsatisfactory organization of seed growing. Seed harvests are still extremely low. Farms do not have enough herbicides and chemicals to increase alfalfa seed production, and they are short of harvesting equipment; this is responsible for considerable losses of seed (up to 50 percent) during harvesting. The problem of concentration of seed growing in southern regions on irrigated land is being resolved slowly. Seed production of a majority of regionalized varieties is low. In this connection special attention should be paid to accelerated reproduction of new varieties with increased seed productivity such as Raduga, [illegible]unskaya hybrid, and Kievskaya variegated hybrid.

[illegible] considerably, self- [illegible] means [illegible] this [illegible] we receive [illegible] equivalent [illegible] agriculture has at its disposal real opportunities [illegible] increase [illegible] harvest from the sunflower crop no less than one and one half [illegible] the next few years.

[illegible] increasing plant protein resources [illegible] grain crops. The results [illegible] experiment [illegible] indicate that if we assure the application [illegible] sufficient [illegible] and mineral fertilizers, optimal [illegible] fertilizer [illegible] including late nitrogen top-dressing, [illegible] gross harvest [illegible] be increased [illegible] to [illegible] million tons.

[illegible] selection experts and biochemists have created [illegible] which are comparable [illegible] surpass them by [illegible] spring wheat and barley high [illegible] have been [illegible] introduced.

[illegible]

[illegible] of summer cattle [illegible] from [illegible] meadows [illegible] over 10 million [illegible] protein [illegible] grass [illegible] feed [illegible] Along with this [illegible] the areas [illegible] have an insignificant rate [illegible] provided with nitrogen fertilizers. This reduces the [illegible] concentrated work to improve natural fodder lands [illegible] feed must also be conducted soundly and purposefully [illegible] grain. Meanwhile in the Ninth Five-Year Plan [illegible] the improved hay fields and pastures were fertilized [illegible] grams of nitrogen, [illegible] kilograms of phosphorus and [illegible] applied per hectare, this is five times below [illegible]. Not enough attention has been paid to this question [illegible].

[illegible] grasses depends essentially on the phases of vegetation [illegible] of mowings. The harvesting of perennial leguminous grasses [illegible] stage of vegetation makes it possible to obtain fodder [illegible] nutritional [illegible] and significantly superior [illegible].

[illegible] multiple cutting and the [illegible] promising. These methods provide an opportunity [illegible],000 to [illegible],000 feed units and [illegible] quintals [illegible] while the yield on irrigated land [illegible] reach 14,000 [illegible] and over [illegible] of [illegible] per hectare. Mixed [illegible] combined plantings [illegible] to be developed [illegible].

[illegible] sowing [illegible] crops which make it possible to obtain two [illegible] harvests per year can be a significant [illegible] for increasing the production of feed and assimilable protein [illegible] and on irrigated land. Conditions are [illegible] for raising secondary crops on the irrigated lands [illegible] where [illegible] can be used almost [illegible] feed units and 18 to 19 quintals of [illegible] from each hectare. Secondary sowings, as calculations [illegible] 15 million hectares in the country.

[illegible] improving the preservation and quality of the feeds being [illegible]. It is necessary to increase sharply the production of haylage, [illegible] grass meal, briquettes and granules, [illegible] with the use of chemical preservatives. To achieve [illegible] a sufficient [illegible] the haylage, hay, and silage, organic acids for [illegible] medium to increase the nutritional quality and [illegible] the digestibility of straw and an appropriate number of special [illegible].

[illegible] the effectiveness of the utilization of grain [illegible] feed remains one of our acute problems. The feeding [illegible] the form of mixed feed balanced in nutritional and biologically [illegible] make it possible to reduce significantly the outlay of [illegible].

[illegible] Additives

[illegible] among protein feeds [illegible] by those of animal origin [illegible] milk by-products, meat, blood and bone meal, fish meal, and [illegible] in comparison with vegetable protein feeds they are marked by a higher [illegible] amino acids, minerals, and certain other substances. [illegible] animal origin is especially [illegible]. However, the ratio of these feeds [illegible]. Effective measures are needed to [illegible] utilization of the by-products of the meat and dairy, fish and [illegible] industries, the silk-winding industry, [illegible] stations.

[illegible] chemical methods of non-protein synthetic preparations [illegible] nitrogen carbamide, ammonium salts, and so forth [illegible]. Their use makes it possible to improve substantially the protein balance in the ruminants' rations and [illegible] the concentrates for hogs and poultry. The attempt [illegible] carbamide [illegible].

[illegible] should be very universal [illegible] assistance [illegible] importing the [illegible] the general problems. With the help of [illegible] problems.

[illegible] expedient [illegible] specialization [illegible] the greatest [illegible] productive [illegible] qualities and the even distribution of the population in the [illegible]

[illegible] development of the productive forces of [illegible]

[illegible]

[illegible] quality and effectiveness [illegible] both theoretical and [illegible] the latest achievements [illegible] and developing [illegible] people and ways to meet these [illegible]

LIVESTOCK FEED PROCUREMENT

IMPORTANCE OF SOYBEANS IN FEED IN KRYMSKAYA OBLAST

Kiev SIL'S'KI VISTI in Ukrainian 1 Feb 80 p 2

[Article by I. Tymoshenko, editorial worker at oblast newspaper KRYMS'KA PRAVDA, Krymskaya Oblast: "Soybeans in Field and Ration"]

[Text] In recent years more and more attention is given to raising soybeans in Crimean kolkhozes and sovkhozes. A marked increase in sowing this valuable crop is evident in the Krasnogvardeyskyy rayon where it occupied 1932 hectares last year, providing on the average 25.6 quintals of soybean seeds per hectare. Considerable experience was acquired by the Lenin prize kolkhoz "Druzhba Narodiv".

This kolkhoz began with a small production experiment on 25 hectares. The crop was observed the first two years, no more than 9-10 quintals were harvested per hectare. In the last year of the 9th Five-Year Plan soybeans already occupied 400 hectares and yielded 21.3 quintals of seed per hectare. They learned to grow it here not only as a primary crop but also in repeated sowing. In 1979, for example, on 470 hectares of primary sowing, 27 quintals were obtained per hectare, and on 172 post-harvest hectares, 18.6 quintals on each. This success is the result of high-level crop raising, creative exploration and putting into effect scientific achievement and leading experience as expressed at the VDNKh SSSR and VDNKh Ukr SSR [Exhibition of National Economic Achievements].

"Life itself underscores the necessity of producing soybeans," remarks kolkhoz manager Oleksandr Dmytrovych Kalynychenko.

This was not mere talk. A deficiency of vegetable protein in the feeding rations of cattle and poultry was a complicated problem. Meanwhile, it was calculated that when the ration lacks 30 percent protein, feed losses per production unit are one and half of two times greater compared to full value feeding.

Sixteen thousand heads of cattle must be fed, including 4200 cows. Not only must they be fed, but the proper amount of production must be obtained with the smallest losses. There is also a kolkhoz broiler plant with the potential for 7 thousand tons of poultry per year.

[illegible] per cow [illegible] increased [illegible] the average [illegible] 1,800 kg in 1970 [illegible] 1974 [illegible] production in this period increased [illegible]. This happened primarily because of [illegible]

[illegible] the following experiment was conducted here. [illegible] 300 cows [illegible] 90 grams of cattle cakes for each kg of milk [illegible] average approximately 900 grams per head. Compared to the control group, milk yielding increased by 0.9 kg per cow, and milk fat content [illegible] increased.

[illegible] can be used to multiply 0.9 kg by 4000 heads. It will amount to an additional 3700 kg of milk without any losses. This [illegible] daily figure; how much more will be accumulated in a year. Assuming that the gross milk production is 16,000 tons, we will calculate the additional [illegible] percent fat. This will provide for 32 tons of creamery butter.

[illegible] possibilities for satisfying the need for protein additives [illegible] limited. [illegible] percent of soybean cattle cakes are added here to the [illegible] feed ration during the first period of growth beginning with [illegible] days. Average daily increase in live weight grew [illegible] grams. Last year, as a result, an additional [illegible] were obtained and [illegible] tons of mixed feed were saved.

[illegible] ideas exist about the use of soybeans in cattle feed. Some specialists feel it should be fed to the cattle whole, dried well and [illegible]. In the kolkhoz "Druzhba Narodov" things are done differently.

[illegible] oil [illegible]. Pressure in the presses was adjusted [illegible]. A suitable frying temperature is maintained.

[illegible] between [illegible] 23 percent fat. [illegible] percent is removed [illegible] remains in cattle cakes which is completely adequate for [illegible]

[illegible] kg of oil and 80 kg of cattle cakes are obtained from one quintal of soybeans. The kolkhoz realized the oil not only for food purposes. [illegible] bought it eagerly paying [illegible] each. [illegible] soybeans provides the kolkhoz with [illegible] amounts to approximately [illegible] conversion [illegible] the value of [illegible] expenses in growing this crop are paid with [illegible] realization.

[illegible] attention is paid today to the industrial technology of [illegible]. This applies also to soybeans. It is a fact and not mere [illegible] industrial means with minimal or perhaps completely without the waste of hand labor. This is the technology of soybean growing at the kolkhoz "Druzhba Narodiv".

In a ten-field crop rotation, soybeans have been allocated to one field after winter wheat. After soybeans, winter crops also fare well utilizing the accumulated nitrogen in the soil. A regular, scientifically and practically proved crop change follows: corn for silage is sown, winter vetch mixed with wheat for green chop, then post-harvest corn, winter barley, sunflowers, spring barley with an overseeding of alfalfa, and then alfalfa for two years.

Soybeans are very demanding with regard to agrophonics. Therefore, detailed and tried growing technology is strictly adhered to. Repeated sowing is done after winter crops for green chop and silage, sowing at the end of May through the beginning of June. Prior to sowing, the field is plowed and a moisture-storing watering is done with a norm of 800-900 cubic meters per hectare. Two more waterings are done during vegetation with a somewhat smaller norm. The remaining agrotechnical measures are the same as for primary sowing.

Knowledge and practical experience has proved that in southern conditions the best returns of the soybean hectare can be obtained from irrigated fields. There are years when it yields a good crop also on dry lands. It's best not to count on it though. Still, this crop occupies fairly little space in the irrigated feed-grain crop rotation. Little space because it has not yet been approved by agricultural organs. They are crowding corn fields, filling silage reserves by its repeated sowing.

Other difficulties come up in the kolkhoz related to the seed production of this valuable crop. The chief agronomist, Ye. V. Tereshenko, states that until now soybean variety trial has not been adequately arranged. Herbicides are lacking, especially treplan without which industrial technology cannot be applied. Special machinery is required for sowing, crop care and for harvesting. Successful resolution of these problems would permit the republic's southern farms to produce a high crop on a considerably larger scale.

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CSO: [illegible]

LIVESTOCK FEED, PROCUREMENT

FEED CROPS IN VINNITSKAYA OBLAST

Kiev SIL'S'KI VISTI in Ukrainian 30 Jan 80 p 2

[Article by B. Drobchak: "Feed Crops in Vinnitskaya Oblast"]

> [Text] Recently the Central Committee of the Ukrainian CP approved the work of party organizations, soviet and farm organizations, kolkhozes and sovkhozes in the Vinnitsa area towards further increasing feed production and quality. An interview follows given by the chief of Vinnitskaya Oblast Agricultural Administration D. Klymchuk to SIL'S'KI VISTI correspondent B. Drobchak.

High estimates of our work in furthering the growth of this important branch of agricultural production obligate us to work even better. Therefore, in determining the work parameters for the next five-year plan, we decided on a considerable meat and milk production increase. Poultry raising will also be expanded.

The projected program can be fulfilled only if livestock is provided with high-quality feed. With this in mind, complex plans were developed for the production and use of feed for 1981-1985 within the whole oblast, rayons and farms. The plans were prepared by party, soviet and farm workers, and specialists from the Ukrainian Scientific-Research Institute of Feeds.

Plans anticipate the establishment of transition funds, also providing for the feed needs of kolkhoz workers' and officials' own livestock and poultry. Experience acquired by the Lityns'kyy rayon farms was particularly useful.

A feed production increase of one and a half times or more will be obtained not by increasing the area, but through a more rational utilization of each hectare of feed crop fields. The experience of kolkhoz imeni [illegible], Tyvrivs'kyy rayon, where sowing of perennial grasses replaced low-yield annuals, confirms this. A marked increase in feed output was obtained. In a 100 hectare calculation, the farm obtains one and a half thousand quintals of milk.

feed rations will be high, of course, when they are balanced in nutrients. Therefore, special attention is given to crops high in protein content. Almost 400 thousand hectares of land are allocated to feed crop fields within the oblast. Farms where priority is given to pulse crops manage better. Following plans, areas for peas are being expanded this year. This applies primarily to the following rayons: Khmil'nyts'kyy, Kryzhopil's'kyy, Pishchanskyy, Shargorodskyy, and Pogrebyshchens'kyy. At the same time feed crop fields will become more productive because of greater saturation with grain feed crops. Seed growing is being improved for this purpose. A production association "Soltsasinprom" was created to coordinate the work headed by socialist work hero, M.D. Bilous. The association includes the oblast interfarm station on grass-seed growing, 22 specialized seed kolkhozes, scientific-research institutions, high quality seed growing kolkhozes and sovkhozes.

Specialized enterprises are being built on a number of farms to realize stipulated measures. A factory for seed preparation and curing was organized at the kolkhoz imeni Lenin in Bershadskyy rayon.

An analysis of livestock husbandry shows that a productivity drop, especially in cows, occurs as a rule in early spring and late fall. It is very important, then, to provide the cattle with green chop. This matter is solved creatively in each rayon and farm. For example, in the Bars'kyy rayon kolkhozes winter rye of the "Verkhnyats'ke tetraploidne" variety provides a good green chop in the early spring period. In Tul'chyns'kyy, Nemyrivs'kyy, Haysyns'kyy and several other rayons, the green mass of rape is used for cattle feeding in the late fall period. Intermediate and repeated sowing provide for reserve fodder supplements. If increased three times, which is possible, then 11,000 tons of feed units will be obtained additionally.

Generally, a high degree of feed production intensification needs continuous effort to increase field productivity. Therefore, manure farms were put in working order and productivity detachments were organized. According to the decision of party obkom and oblast executive committee, a three-month drive is being held within the oblast now to bring out organic fertilizers. In all, by April 1, 6.5 million tons will be delivered to kolkhoz and sovkhoz fields. This will double the nutrients under feed crops. All feed-crop fields were carefully watched by agrochemists. It was determined that in many areas the soil has increased acidity. During the three-month period 261,000 tons of neutralizing lime material will be procured.

So-called small irrigation is of considerable importance to further feed production intensification. Watered crops today are grown on a little more than 11,000 hectares. However, each of them, they say, works for several dry-land hectares. We are, therefore, expanding watered areas. Farm experience points to the necessity of doing it. For example, in the kolkhoz [illegible] [illegible] [illegible] [illegible] [illegible] in Bashkirskiy [illegible] 700 hectares [illegible] [illegible] [illegible] feed crops an additional [illegible] quintals of mineral fertilizer. Because of an abundant harvest the farm obtained on the average [illegible] quintals of feed units per hectare. Another example follows. On the kolkhoz imeni [illegible] in the same rayon, [illegible] quintals of green mass of perennial grasses were obtained per hectare in dry areas, while they utilized small irrigation, [illegible] quintals per hectare. [illegible] [illegible] [illegible] provide a marked increase in the [illegible] grain harvest [illegible] [illegible] an adequate amount of feed from these fields.

Feed production is gradually being changed to an industrial basis, which [illegible] it as a separate branch. Teams, brigades and special [illegible] [illegible] formed on farms. As an example, this is how things were organized in the kolkhoz imeni [illegible], [illegible] rayon. Grass, [illegible], [illegible], root and other feed crops are fully mechanized. The feed production brigade consists of [illegible] skilled workers, headed by an able organizer, [illegible]. In the collective there are [illegible] communists, [illegible] Komsomol members, [illegible] deputies [illegible] [illegible] [illegible]. Each worker is interested in raising work productivity. Measures for material and moral stimulus have been worked out. For overfulfilling the farm feed procurement responsibilities, a 20 percent [illegible] increase is added. Each year the brigade harvests more than [illegible] quintals of feed units per hectare.

[illegible] [illegible] [illegible] [illegible] mechanized production detachments and brigades organized [illegible] the oblast for feed production, procurement and feed preparation [illegible] [illegible]. Feed complexes, feed kitchens and feed [illegible] are active on farms. [illegible] [illegible] [illegible] [illegible] 16,000 tons of feed mixtures are prepared there. [illegible] and chemical straw preparation, as well as granular and briquette [illegible] feed.

[illegible]
[illegible]

LIVESTOCK FEED PROCUREMENT

USE OF LOCAL FEED RESOURCES URGED IN CENTRAL ASIA

[Editorial Report] Soviet central Asian agricultural journals continue to urge local livestockmen to make optimum use of feed crops well suited to their particular areas. In Ashkhabad SEL'SKOYE KHOZYAYSTVO TURKMENISTANA No 11, Nov 79 p 37 Turkmenistan livestockmen are urged to consider the advantages of late guinea sorghum [sorgo gvineyskoye pozdneye], a cereal grass of equatorial African origin. A one-page article by senior scientific co-worker A. Agayev reports that late guinea sorghum was selected from among 80 sorghum varieties for the heat and drought resistance it will bring to the sand ridges and sand hills of Turkmenistan. The remainder of the article is devoted to a discussion of the crops traits and projected yields.

A January article in Tashkent SEL'SKOYE KHOZYAYSTVO UZBEKISTANA No 1, Jan 80 pp 37-38 stresses the importance of alfalfa's place in Uzbekistan's cotton crop rotation, both as a primary source of feed protein for livestock and as a predecessor crop for cotton and corn. The page and a half article by A. Naviyanov discusses the optimum fertilizer dosages for increased alfalfa yields. This is important in increasing cotton and corn yields on the serozem and meadow soils of Uzbekistan.

A two page article in Tashkent SEL'SKOYE KHOZYAYSTVO UZBEKISTANA No 1, Jan 80 pp 35-36 by Yu. Imamov and N. Krasil'nikov reports that every year during the cotton harvest about a million tons of cotton harvest by products accumulate and an additional 500,000 tons accumulate at cotton processing plants in Uzbekistan. The authors report that pesticide residues therein are at a level permissible for non-lactating livestock but go on to remind readers that agricultural workers in Uzbekistan have been tasked with implementing biological methods of cotton plant protection in the next two to three years in order to improve the feed qualities of these byproducts and allow them to augment Uzbekistan's livestock feed supplies. The remainder of the article deals with local experiments in preparing the feed and fattening steers and sheep thereon.

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UZBEKISTAN PARTY RESOLUTION ON LIVESTOCK RAISING

Tashkent SEL'SKOYE KHOZYAYSTVO UZBEKISTANA in Russian No 11, Nov 79 pp 2-5

[Resolution of the 14th Plenum of the Uzbekistan Communist Party Central Committee "On the Republic Party Organization's Tasks for Fulfilling the Decree Passed by the CPSU Central Committee and the USSR Council of Ministers 'On Measures to Accelerate the Development of Livestock Raising in the Uzbek SSR'"]

[Text] After hearing discussion of the report by Comrade Sh. R. Rashidov, first secretary of the Uzbekistan Communist Party Central Committee, "On the Republic Party Organization's Tasks for Fulfilling the Decree Passed by the CPSU Central Committee and the USSR Council of Ministers 'On Measures to Accelerate the Development of Livestock Raising in the Uzbek SSR'," the plenum of the Uzbekistan Communist Party Central Committee notes that as a result of decisions made at the 25th party congress and the July 1978 Plenum of the CPSU Central Committee steps are successfully under way in the republic to uplift all branches of agriculture, and that good results have been achieved in cotton raising and in all other branches of crop cultivation and animal husbandry.

The gross agricultural output plan has been exceeded by 2.8 percent for the first 3 years of the current five-year plan, exceeding the figures for the ninth Five-Year Plan by 20 percent. A total of 16.3 million tons of cotton, 2.8 million tons of grain, 5.5 million tons of fruits and vegetables, and a large amount of other products have been sold to the state. Social issues have been successfully resolved. The welfare of rural workers has improved.

Carrying out the instructions of Comrade L. I. Brezhnev, general secretary of the CPSU Central Committee and chairman of the Presidium of the USSR Supreme Soviet, to achieve fuller satisfaction of the population's needs for animal husbandry products by producing them ourselves, Uzbekistan's party organization is doing a great deal to improve our animal husbandry. Substantial progress has been made during the current five-year period in the development of this vitally important branch. During the [illegible] years, average annual meat production on kolkhozes, sovkhozes and interfarm enterprises was increased by [illegible] percent over the ninth Five-Year Plan level, milk production [illegible] percent, and egg production [illegible] percent. The total number of all types of livestock and poultry has grown, their productivity has risen, specialization and concentration is being effected on an interfarm basis and all branches of animal husbandry are being put on an industrial basis, and the feed base is being built up.

At the same time, the plenum of the Uzbekistan Communist Party Central Committee believes that there are still many unresolved issues in the development of animal husbandry and that reserves and possibilities for the intensive development of this branch are not being fully utilized both on kolkhozes, sovkhozes and other state enterprises and on the personal plots of the citizens.

Many farms are slow in resolving basic questions pertaining to the development of animal husbandry. Reserves are not being adequately utilized for increasing meat production by improving grazing and the intensive fattening of livestock and by increasing the weights of animals sold for meat, especially those slaughtered for consumption on the farms themselves. Sheep raising, horse breeding, camel and rabbit raising, bee-keeping and pond fish farming are not receiving adequate attention in certain rayons and on certain farms.

Party organizations, soviet and agricultural agencies and the directors of kolkhozes and sovkhozes in a number of oblasts and rayons are not taking adequate steps to build up the livestock feed base and progressive technology for harvesting, store-piling and utilizing the feed are still not being adopted universally. The production of balanced rations is growing and the quality is being improved too slowly.

Shortcomings in the construction of animal husbandry facilities are seriously retarding the continued improvement of animal husbandry. Start-up dates for complexes, livestock sections, poultry houses and other facilities are frequently not met. Many farms still lag in the adoption of complete mechanization of labor-consuming operations in the livestock sections of farms, labor productivity is growing slowly and the basic cost of products is high.

All this means that we must have a drastic refocusing of attention on the part of party, soviet and agricultural agencies, trade-union and Komsomol organizations, ministries and departments, kolkhozes and sovkhozes, scientific institutions, industrial enterprises and construction organizations, on the part of all the republic's workers, upon the development of animal husbandry.

[illegible] of the Uzbekistan Communist Party Central Committee [illegible] that the CPSU Central Committee and the USSR Council of Ministers [illegible] decree "On Measures to Accelerate the Development of Animal Husbandry in the Uzbek SSR," which provides comprehensive [illegible] conditions facilitating the continued accelerated development of animal husbandry in the republic and allocate large sums of state capital for the construction of animal husbandry facilities and enterprises [illegible] of balanced rations.

[illegible] decree is highly important for Uzbekistan and [illegible] new [illegible] of the paternal concern of the party and government [illegible] for the welfare of the Soviet people and for the continued prosperity of the republic.

The plenum of the Uzbekistan Communist Party Central Committee resolves:

[illegible] accept as a guide and for undeviating fulfillment the decree passed by the CPSU Central Committee and the USSR Council of Ministers on [illegible] 1979 "On Measures to Accelerate the Development of Animal Husbandry in the Uzbek SSR." To consider as one of the main tasks of republic party, [illegible] and agricultural agencies, along with the development of cotton growing, [illegible] during the 11th five-year period [illegible] of animal husbandry and its all-round intensification [illegible] feed base, fuller utilization of production [illegible] of kolkhozes and sovkhozes and of other agricultural enterprises, and the application of scientific and technological achievements and advanced experience.

[illegible] meat production in live weight on all categories of farms [illegible] tons in 1985, 40 percent above the level achieved in 1978; milk production to [illegible] million tons, an increase of [illegible] percent; and egg production to [illegible] billion, an increase of 100 percent.

[illegible] during the period 1981-1985 by building new [illegible] and by remodeling and expanding existing ones, livestock complexes for raising and fattening cattle with a combined capacity of [illegible] head; poultry farms for meat production with a capacity of [illegible]; hog raising and fattening complexes with a capacity of [illegible] head; milk production complexes and mechanized farm sections with a combined capacity of 64,400 cows; egg-production poultry farms with [illegible] million layers, pure bred poultry farms with a capacity of [illegible] hens, and pure bred poultry production facilities with [illegible] million birds.

[illegible] the Bureau of the Uzbekistan Communist Party Central Committee [illegible] the Council of Ministers and the Uzbek SSR Gosplan to explain the requirements for increasing animal husbandry output and for building and [illegible] animal husbandry facilities during the period 1980-1985 [illegible]

Karakalpak ASSR and the oblasts within the shortest possible time and to establish strict control over their fulfillment.

To order ministries and departments, party obkoms, gorkoms and raykoms, the Karakalpak ASSR Council of Ministers, oblispolkoms, gorispolkoms and rayispolkoms, primary party organizations, trade-union and Komsomol organs of the republic to take steps to insure absolute fulfillment of the program for increasing animal husbandry output and for strengthening its materials and equipment base by each oblast and rayon, each farm and enterprise.

To take effective steps to eliminate the deficiencies mentioned in this resolution and in the report by Comrade Sh. R. Rashidov. To complete concentration and specialization in animal husbandry and conversion of the branch to an industrial basis within the next few years; to improve the performance of complexes, livestock sections and poultry farms and interfarm and subsidiary animal husbandry enterprises; to accelerate the construction, remodeling and expansion of animal husbandry facilities, to insure highly efficient use of the land, technical and other equipment and labor resources, and to achieve a drastic increase in the production of milk, meat and other products, improve their quality and reduce their cost.

To consider as the main task in animal husbandry, along with increasing the total number of livestock and poultry, that of increasing their productivity within the shortest possible time and improving reproduction, and on this basis to make full use of reserves for increasing the production of beef, mutton, pork, poultry and rabbit meat. To devote special attention to raising the weight of animals, both those sold to the state and those slaughtered on the farms. To reduce fattening-out periods and to increase daily weight gains considerably. To increase the average live weight of cattle sold for slaughter to 450-500 kilograms, the weight of sheep to 45-50 and that of hogs to 110-115 kilograms.

To insure the intensive development of hog raising and broiler production. To take additional steps to accelerate the development of sheep and goat raising and to increase the production of mutton, wool, persian lamb and other products.

To achieve all-round development of fish farming on fish farms, kolkhozes, sovkhozes and other farms and to increase fish production to 500,000 quintals by the end of the 11th Five-Year Plan.

To substantially increase the number of cows and raise their milk output. To increase the average milk yield per cow under the 11th Five-Year Plan to 3,000 kilograms on republic kolkhozes and state farms, and to 4,000 or more in rayons with a developed dairy industry. To conduct a determined campaign against barrenness, to employ artificial insemination of agricultural animals extensively and to achieve a fundamental improvement in breeding work on the livestock sections.

[illegible] commodity [illegible] agricultural [illegible] enterprises [illegible] for animal husbandry [illegible] specializing [illegible] alfalfa, corn raised for grain and for silage [illegible] improving feed quality.

[illegible] technologies in feed production [illegible] feeds [illegible] systematically [illegible] irrigation [illegible] specific [illegible] kolkhoz [illegible] other agricultural enterprises [illegible] development of feed production based on the total employment of [illegible] the expansion of areas planted to alfalfa and corn, the [illegible] of second and early-winter feed [illegible]

[illegible] gorkoms and raykoms, the Karakalpak ASSR Council [illegible] and raiispolkoms, gorispolkoms and [illegible] reserves and possibilities for increasing animal husbandry [illegible] taking specific conditions into account, and to set up [illegible] husbandry sections on kolkhozes and sovkhozes [illegible] animal husbandry on farms [illegible] enterprises, [illegible] and to help them in every way possible [illegible] work out and implement specific measures [illegible] animal husbandry on the personal [illegible] kolkhoz members, [illegible] workers and other citizens [illegible] achieve [illegible] increase [illegible] and better organize the procurement of animal [illegible] from the population [illegible] situation in which [illegible] acquire livestock and poultry on a planned basis [illegible] the required quantities when it is needed [illegible] people's [illegible] efficient use is made of the [illegible] feed.

[illegible] procurement of excess products from the individual [illegible] voluntary basis and [illegible] selling extra livestock, milk and other [illegible]

[illegible] the UzSSR ministries of construction, [illegible] the Uzplodoovoshchvinprom association, [illegible] construction Administration and the [illegible] Main Administration for [illegible] committee [illegible] ensure the fulfillment [illegible] equipment [illegible] with the construction of new and the remodeling of existing animal husbandry complexes, poultry farms, pure bred livestock farms and [illegible] facilities and grain processing feed production enterprises [illegible] of this decree, as well as other animal husbandry facilities.

[illegible] the Uzbek SSR Ministry of Land Reclamation and Water Management, Glavsredazirsovkhozstroy, Uzbek SSR Main Administration for the Construction of Water Management Facilities and Glavsredazirsovkhozstroy to insure the timely reclamation of 305,200 ha areas of land for irrigation and [illegible] during the 11th Five Year Plan.

[illegible] the Uzbek SSR Goskomsel'khoztekhnika and the Ministry of Agriculture to thoroughly improve equipment installation and the technical servicing of livestock complexes and poultry farms, to insure timely delivery of materials and equipment for the construction and remodeling of animal husbandry facilities [illegible] increase the annual volume of remodeling work at existing [illegible] sections of farms under the 11th Five-Year Plan [illegible] capacity [illegible] head.

[illegible] the Uzbek SSR Gosplan, Ministry of Agriculture, Goskomsel'khoztekhnika and [illegible] to prepare proposals for organizing the production of new machinery, attachments and nonstandardized equipment for animal husbandry at republic enterprises and submit them to the Uzbek SSR Council of Ministers within a period of 1 month.

[illegible] the Uzbek SSR Gosplan, the Ministries of Agriculture, Land Reclamation and Water Management, Goskomsel'khoztekhnika, the State Committee for Vocational and Technical Education under the Uzbek SSR Council of Ministers, jointly with the Council of Ministers of the Karakalpak ASSR and oblispolkoms to take specific measures for the training and advanced training of specialists at institutes and tekhnikums, vocational and technical schools, general education schools and advanced [illegible] schools [illegible] and [illegible] training and advanced training [illegible] in the required occupations for work at animal husbandry complexes, in the livestock sections of farms, at poultry farms and interfarm enterprises.

[illegible] the Central Asian Department of VASKhNIL (All-Union Academy of Agricultural Sciences imeni V. I. Lenin) to concentrate the efforts of scientists on the most important problems in animal husbandry, to raise the level of scientific research work in animal husbandry and feed production, and to improve the work performed by scientific-research institutes in providing practical assistance to kolkhozes, sovkhozes, animal husbandry complexes, poultry farms and other enterprises in the practical application of scientific achievements and advanced knowhow.

[illegible]

[illegible] specialists [illegible]

[illegible] enterprises [illegible] Ministry [illegible]

[illegible] collectives and enterprises [illegible] introduction [illegible]

[illegible] welfare [illegible]

[illegible] groups of [illegible] develop [illegible] improving the [illegible]

[illegible] press and of radio [illegible] dissemination of advanced [illegible]

[illegible] The Ukrainian Communist Party Central Committee [illegible] communists [illegible] members [illegible] personnel of industrial enterprises [illegible] scientific research institutions [illegible] implementation of the measures [illegible] animal husbandry and [illegible] the state and [illegible] accomplishment [illegible] improving the welfare of the Soviet people.

[illegible] Ukrainian [illegible]

LIVESTOCK

STEPS TO IMPROVE DAIRY COMPLEX PERFORMANCE

Tashkent SEL'SKOYE KHOZYAYSTVO UZBEKISTANA in Russian No 11, Nov 79 pp 8-9

[Article by I. Larin, candidate of economic sciences and head of the Department of Interfarm Cooperation and Agroindustrial Integration of SANIIEKh (Central Asian Scientific Research Institute of Agricultural Economics): "Reserves for Improving the Effectiveness of Dairy Complexes"]

[Text] The July 1978 Plenum of the CPSU Central Committee, which outlined a broad program for increasing the output of animal husbandry products, defined the branch's conversion to an industrial basis and its further intensification as the main way of achieving this.

The intensification of animal husbandry is inseparably bound to production concentration, which makes it possible to adopt industrial farming methods on a broad scale and is a concrete reflection of technological progress in the branch.

The Uzbek SSR Ministry of Agriculture had 86 dairy complexes in 1977, including 57 on kolkhozes and 29 on sovkhozes. These contained 112,000 head, or 6.4 percent of the cattle in the public sector, including 36,800 milk cows. The complexes produced 81,900 tons of milk, 11.8 percent of the republic's total milk production.

The industrial milk complexes are larger. Their herds presently average 1,180 head, including 328 milk cows, whereas the corresponding figures are 814 and 236 for kolkhozes and 997 and 241 for sovkhozes.

The existing complexes have still not had any substantial effect upon the branch as a whole. The average number of cattle and of milk cows remained practically the same for kolkhozes between 1965 and 1977, and even dropped on sovkhozes. The same also applies to dairy farming effectiveness.

With an average annual increase in milk yield per cow from 881 to 2,078 kilograms and a 65 percent grow of labor productivity, not only did milk [illegible] cases [illegible] not drop, but they actually increased. The situation [illegible] state sector is no better. With a purchase price of [illegible] rubles per [illegible] of milk, the cost of producing it was [illegible] rubles [illegible] rubles per [illegible].

Why are the complexes having such a weak effect upon the dairy farming economy?

This problem's effectiveness depends upon many factors, including organizational and economic factors. Let us consider a few of them.

Complexes for 400, 600, 800 and 1200 cows have been accepted for construction in the republic. The size of these complexes depends upon the capacity of the farms and upon feed resources.

[illegible] complexes [illegible] in 1975, [illegible] were designed to handle 400 cows, [illegible] 800 [illegible] and [illegible] 1200 cows.

[illegible] should say a few things about complexes designed to handle 600 cows.

[illegible] of the adoption of progressive production technologies and the [illegible] of production equipment and structural elements depends [illegible] upon the [illegible] in type-sizes of livestock complexes [illegible] Central Committee and the USSR Council of [illegible] adopted [illegible] decision on this matter. The decision states that construction may be started on the following basic type-sizes of [illegible] complexes during the 1976-1980 period: hog raising and fattening complexes with an annual capacity of 12,000, 24,000, 54,000 and 108,000 head; complexes for raising and fattening out calves to [illegible] 5,000 and 10,000 head annually; and feed lots with capacities of 5,000, 10,000, 20,000 and 30,000 head of cattle. The decision calls for the creation of dairy complexes with handling capacities of 400, 800, 1200 and 2,000 milk cows and heifer production complexes with capacities of [illegible] 000 and 6,000 head.

In accordance with these instructions, planning and technological institutes and the Ministry of Agricultural Machine Building are filling orders [illegible] these type-sizes of complexes.

[illegible] the creation of farms with capacities of 600 cows, however, [illegible] special system of machinery and equipment and a special technology and organization of labor, the development of which requires [illegible] and this is not practical from the national economic standpoint. On the other hand, it is not efficient to employ the technology [illegible] and the organization of labor designed for [illegible] type-sizes of complexes, since this results in higher production costs.

It is therefore recommended that the construction of 600-cow complexes be dropped and that complexes be built for 400, 800 or 1200 head.

Dairy complexes in the republic are created around existing livestock sections of kolkhozes and sovkhozes and are supplied with equipment and stocked through expanded reproduction on the kolkhozes and sovkhozes themselves.

With respect to total number of livestock, the complexes have reached their rated capacity. On the average, each of them has even more livestock than specified in the plan. Not one of the types of complexes has the full number of milk cows specified in the plan, however. They have only 31,787 milk cows, or 66 percent of the 48,000 head called for.

The specific portion of milk cows in the complex herds averages 27.8 percent, an extremely low figure. As a result, their production is presently milk- and meat-focused. Milk accounts for only 52.4 percent of their total earnings, compared with the 80 to 90 percent required by industrial technology.

In general, the herd structure of the farms from which the dairy complexes are formed does not meet requirements for the expanded reproduction called for by the industrial technology.

Foreign experience, as well as the practical experience of the Baltic republics, have shown that expanded reproduction of the herd can be achieved with an annual replacement of 20 to 25 percent of the cows. For a 400-head complex, then, 100 animals must be culled each year.

The livestock culled from the main herd have to be fattened for 3 months. Consequently, this means that an average of 25 head must be fattened throughout the year.

In order to raise the required 100 replacement heifers (bred at the age of 18 months), a complex must have an annual average of 225 heifers.

With an output of 380 head of commercial animals and keeping 100 heifers to raise as replacements, 280 head of cattle will be fattened. If they are fattened for 13 months--the period required for the industrial technology--the average annual number will be 303 head.

A 400-head dairy complex should therefore have the following herd structure: 280 replacement heifers and 328 head for fattening. Milk cows then account for 40 percent of the herd, replacement heifers 28 percent, and calves and adult animals for fattening 32 percent. The three branches of livestock raising cannot be set up in the optimal sizes within a single enterprise, however. The dairy complexes must, therefore, be released from raising heifers and fattening livestock. Only calves below the age of 20 days and the number of cows required to comprise up up to 25 percent of the herd should remain at the complexes.

It is important to consider both the quantitative and the qualitative aspects of building up the complex herds. With an actual annual increase of [illegible] percent in the number of animals in the herds, it takes [illegible] years to build them up to the required number. During these years, total depreciation allowances specified for the output from the planned number of animals will be made for the milk from a considerably smaller number of cows, increasing the production cost of the milk.

Table 1

Milk Production Efficiency at Complexes in 1977

(1) [illegible]	(2) [illegible]	(3) [illegible]	(4) [illegible]	(5) [illegible]	(6) [illegible]	(7) [illegible]
400	4	601	2840	2.41	10.7	30.10
[illegible]	27	1082	1790	2.64	9.4	27.40
800	1[illegible]	1517	2500	2.20	8.6	25.27
1200	6	2106	2961	2.00	12.2	30.28
(8) [illegible]		1400	2091	2.22	9.4	26.30

1. By capacity of complexes, number of cows
2. Number of complexes
3. Number required to maintain herd at one complex
4. Milk yield per cow, kilograms
5. Feed consumption per quintal of milk, quintals of feed units
6. Labor outlays per quintal of milk, man-hours
7. Cost of producing 1 quintal of milk, rubles
8. Average

Even more important is the matter of quality--building up the complex herds with highly productive animals. Complexes, of course, require a more [illegible] system of machinery and equipment. All of this accounts for the high cost of their construction and at the same time, for their large depreciation allowances and operating costs. Consequently, a very high level of productivity is required for the complexes to operate effectively.

In the oblast, however, the milk yield at the complexes is only 20 percent above that obtained on kolkhozes and sovkhozes, and this accounts for their low effectiveness.

We can see from the data for the group that not one type of dairy complex has reached the optimal profitability level. Even in the increase in milk procurement prices specified in decisions of the July 1978 Plenum of the CPSU Central Committee will do little to change the situation.

In order to raise complex effectiveness, fundamental changes must be made to the system for providing the herd with replacement heifers. Heifers with first calves and with a milk yield exceeding that achieved on the farm must be obtained for this purpose. This is only possible with enterprises specializing in the raising of replacement heifers. And the entire herd should be made up of such animals by the time a complex is placed into operation.

Before defining the required productivity level, let us first analyze the cost of the complexes, because the cost determines operational outlays and economic indicators on the whole.

There are numerous standard plans for dairy complexes, which differ considerably in the cost both of the production buildings and the equipment. When selecting from the standard designs it is extremely important to consider the specific amount of capital available, along with the plan's suitability with respect to local climatic, economic and other conditions. Plans are frequently selected without adequate consideration and without proper economic substantiation. Complexes are frequently built, as a result, which cannot pay for themselves at their achieved production volumes. In addition, plans are changed during the construction process in many cases, and the production buildings have to be rebuilt and redesigned, which runs up the estimate cost of the complexes.

We must take a more serious approach to the selection of standard plans and make the decision to build a complex only after a careful study of the cost per animal and after calculating the actual possibilities for offsetting the capital invested.

We have developed a nomogram to serve as the point of departure for an economic appraisal of standard plans.

The nomogram makes it possible to determine the amount of profit required, with a given milk yield and a given cost per animal, in order for a complex to operate effectively.

Let us consider the use of profit with total production costs per quintal of milk at 22 rubles, the level achieved at 18.7 percent of the republic's dairy complexes.

Table 2

Nomogram of Normative Profit for Dairy Complexes Based on the Cost Per Animal and the Average Annual Milk Yield Per Cow

[illegible] (1)	[illegible] (2)	(3) Необходимо получить прибыль в расчете на 1 ц, руб. (при уровне среднегодового удоя, кг)						
		2000	2500	3000	3500	4000	4500	5000
1000	120	6.00	4,80	4,00	3,43	3,00	2,67	2,40
1500	180	9.00	7,20	6.00	5,14	4,50	4.00	3,60
2000	240	12.00	9.60	8.00	6,86	6.00	5,33	4.80
2500	300	15,00	12.00	10,00	8,57	7.50	6,67	6.00
3000	360	18.00	14.40	12,00	10.29	9.00	8.00	7.20
4000	480	24.00	19.20	16.00	13.71	12,00	10.67	9.60
5000	600	30.00	24,00	20.00	17,14	15,00	13.33	12.00
6000	720	36.00	28.80	24.00	20.57	18,00	16.00	14,40
7000	840	42,00	33.60	28.00	24.00	21,00	18,67	16.80

Key:

1. Cost per cow, rubles
2. Total profit for normal effectiveness
3. Profit essential for each quintal, in rubles (with an average annual milk yield, in kilograms, of:)

For example, with a selling price of 32 rubles per quintal of milk, it is possible to earn 12 rubles in profit. According to the nomogram, this profit level, which provides for normal recovery of the investment, is achieved at the following cost of the facility per animal and with the following productivity:

Cost per place no more than—rubles	Milk yield per cow of at least—kilograms
2000	2000
2500	2500
3000	3000
4000	4000
5000	5000

Preliminary appraisal of the projects being considered for selection and of the cost of remodeling existing complexes will contribute to a reduction in construction costs, the use of more effective construction materials and better stocking of the complexes with highly-productive cows.

Milk production cannot be effectively organized on an industrial basis without creating a good feed base.

we should use as the point of departure for appraising the feed base its outstripping development compared with the productivity level achieved.

It is clear from the table that present consumption per standard head of cattle at complexes is double the norms established by veterinary science. It is enough to obtain an average annual milk yield of 4,000 kilograms, while the actual productivity for the complexes does not exceed 2,494 kilograms.

A monographic study of six dairy complexes has permitted us to reveal deficiencies in the organization of the feed base and ways to improve it.

First, let us talk about the type of feed used.

The composition of the feed ration on many farms does not conform to modern requirements. On the "50 let Oktyabrya" sovkhoz in Bukharskaya Oblast, for example, concentrated feed is used. Feed concentrates make up 61 percent of the rations there, double the norms established by veterinary science. Such a ration increases the meat productivity and fattens the cows, while lowering their milk yields.

An extremely low specific portion of succulent feed--tubers, vegetables and cucurbits--is another widespread deficiency. It accounted for 0.75 to 1.8 percent of the ration on the farms studied, which is several times less than the norm.

Table 1

Feed Resources of Dairy Complexes in 1977

(1)	(2)	Приходится на 1 комплекс (3)		(4)	Расход кормов, ц к. ед. (5)		
		(6)	(7)		(9)	на 1 ц молока (8)	
						фактически (10)	по норме (11)
400	46	862	2557	21	44	2.43	1.09
600	21	1002	3161	25	34	2.64	1.41
800	10	1517	3061	41	37	2.20	1.10
1200	6	2163	3377	51	46	2.88	0.91

Key:

1. Design capacity of complex, number of cows
2. Number of complexes
3. Available for one complex
4. Total number of conditional head per 100 hectares of cultivated land
5. Feed consumption, quintals of feed units
6. Total herd
7. Cultivated land
8. Per quintal of milk
9. Per standard cow
10. Actual
11. Normal

The feed rations are made up of a very small group of feeds. At the milk complexes on the "Leninizm" Kolkhoz in Samarkandskaya Oblast and the Kolkhoz imeni Lenin in Kashkadar'inskaya Oblast, for example, only two or three types of roughage and succulent and grain feed are used, which makes it impossible to mix balanced rations and results in extensive overconsumption of feed.

A significant shortcoming of all the complexes studied is the fact that they delay the switch to feeding the cows green feed in the spring. None of the farms plant late-fall or winter feed crops, early producers of feed. They have also failed to plant late varieties of vegetables, cucurbits and tubers, which has made it necessary to reduce the period during which the cows are fed the milk-producing feeds and has lowered their productivity.

We know that the use of feeds which are readily eaten forms the foundation for a good return in the form of output. This reserve is still not being satisfactorily utilized, however. Many complexes lack a feed processing shop or have an unequipped one. As a result, the feed used there is not processed and does not include admixtures or supplements.

The reserves we have discussed for improving the organization of milk production at industrial complexes should be put into action. This will contribute to the most rapid possible realization of decisions coming out of the July 1978 Plenum of the CPSU Central Committee and the 11th Plenum of the Uzbekistan Communist Party Central Committee.

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LIVESTOCK

INTENSIFYING REPRODUCTION OF HERD URGED

Kishinev SEL'SKOYE KHOZYAYSTVO MOLDAVII in Russian No 11, Nov 79 pp 28-31

[Article by V. Bauk, director of the laboratory of biological reproduction of the Institute of Zoology and Physiology of the MSSR Academy of Sciences and candidate of biological sciences, V. Samorodskiy, chairman of the production association Moldmolprom [Milk Production Association], MSSR Kolkhoz Council, and candidate of economic sciences: "Intensification of the Reproduction of the Herd Is a Very Important Reserve"]

[Text] A statistical analysis of the output of calves per 100 cows and of the productivity of the dairy herd demonstrates that there is a certain correlation between these two indicators. In the Northern zone the livestock farmers of Brichanskiy Rayon who last year produced the largest milk yield in the republic--3,716 kilograms of milk per cow--also have the largest yield of calves per 100 cows--98. In Oknitskiy Rayon the corresponding figures are 3,401 and 92 and in Yedinetskiy--3,313 and 95. A similar situation exists in the Central Zone in Slobodzeyskiy, Novoanenskiy and in the Southern Zone in the Kaushanskiy rayons. In contrast, in Suvorovskiy Rayon, where the yield of calves was lowest (84) the milk yield per cow was also lowest--2,679 kilograms. In Chimishliyskiy the corresponding figures were 90 and 2,722 and in Kotovskiy--88 and 2,876.

The work on the reproduction of the herd is composed of two interrelated stages. The first is the selection and examination of high-class pedigree bull sires for the quality of the progeny and the organization of their rearing and use. This work must be accompanied by the supplying of semen from the sires that improve the offspring to large industrial dairy complexes, complexes for raising heifers and kolkhoz and sovkhoz farms.

By using the semen of the strain builders it is possible to produce daughters with an average 200-400 kilogram milk yield. This is one of the large untapped resources in dairy farming, especially when it is possible to produce 5,000-8,000 offspring per year from one strain builder and to keep the "semen material" for several decades. In addition, the insemination capability of the semen from various bull sires fluctuates between 40 and 68 percent. This is why the insemination of cows and heifers with the semen of bull sires that have been evaluated for the quality of their progeny and for their insemination capability must be one of the key factors in the qualitative change of animals. This will facilitate the continued improvement in the productivity of dairy livestock farming without greatly increasing the dairy herd.

In connection with this one of the priority goals in the reproduction of the herd is helping in the selection, raising, and evaluation of bulls on the basis of their progeny and on the insemination capability. For this it is essential to take control over all cows which will be used to produce bulls, to create facilities for raising them, to build a central station and two or three of its affiliates in accordance with the promising technology for the long-term storage of semen and to create a sperm bank.

The method of long-term storage of the semen of bull sires in a deep-frozen state is very important for raising the effectiveness of the reproduction of the herd. In the republic two technologies have become widespread--the use of polymer tubes and the use of the granule form. Comparative experiments conducted by us on a large number of cows and heifers in Slobodzeyskiy, Grigoriopol'skiy and Dubossarskiy rayons showed that the use of unfrozen semen that had been stored in polymer tubes in a special medium developed by us facilitated the production of 61 percent pregnant animals at the first insemination. Using granules, the figure was 37 percent. Nevertheless, at the Central Station for the Artificial Insemination of Agricultural Animals only 26.5 percent of the 1,761,000 doses were frozen in polymer tubes in 1979.

Further research conducted in various geographic zones demonstrated that because of the low quality and high microbe pollution of the semen its insemination capability decreased to 14-40 percent. The elimination of this problem is possible through a complex biological evaluation of the quality of the semen that is sent to large industrial complexes, kolkhozes and sovkhozes. At the present time it has been recognized that the semen material that is earmarked for shipment must have the following indicators: mobility--4 points; survival rate at +37°--5 hours, and a content of no more than 500 microbe bodies per 1 milliliter of diluted semen. For this purpose we must create special departments of biological control at stations of artificial insemination. This department would be analogous to departments of technical quality control in industry. Only after a careful examination of seed quality would the departments make a decision about shipping the semen to enterprises. In addition, the specialists of stations and enterprises are obliged to test the insemination capacity of bulls that will be used to artificially inseminate cows.

The central place in the reproduction of the herd is the organization of work at large industrial complexes and on kolkhoz and sovkhoz farms. Practice shows that barrenness is brought to a minimum in those enterprises where a scientifically-based organization of reproduction has been established and where knowledgeable and conscientious specialists are at work.

As the analysis showed, the service period, i.e. the time from calving until successful insemination in cows, has increased on the average in the republic and comprises 110 days in lieu of 85-90 days. If we consider that in cows with a lengthened service period the lactation is increased insignificantly, then this results in an underproduction of 200 kilograms per cow.

In the republic there are many enterprises that have achieved good results in the reproduction of the herd. The republic's livestock farmers are justifiably proud of the names of the best technologists-inseminators--I. S. Pavel of the Rassvet Kolkhoz of Brichanskiy, P. S. Lupu of the Put' k Kommunizmu Kolkhoz of Kutuzovskiy Rayon, V. Svinia of the Kriulyanskiy Livestock Farm. These men facilitate the production of 106, 108 and 111 calves per 100 cows respectively.

At the same time the number of calves that are born and especially that are raised is significantly smaller than expected and many specialists try to explain this by the absence of fertilization. Nevertheless, science and practice have shown that after the first insemination of cows and heifers with "semen material" during the stage of physiological readiness of the organism for fertilization, success is achieved in over 80 percent of the cases. In practice 45-75 percent of the animals remain pregnant, which is related to a high rate of embryonic death. Numerous experiments in this area have shown that one of the main reasons for embryonic death is alimentary deficiency, which exists with the non-efficient and unbalanced feeding of animals.

In the given case a disorder in the function of the reproductive organs begins. For this reason animals are readied for the further reproduction of offspring ahead of time, beginning with the organization of the inter-lactation period. During this time and in the post-partum period alkaline feeds should prevail over acid feeds, and there should be sufficient quantities of vitamins A, D and E. Thus, for example, if a cow is given 15 milligrams of carotene per feed unit during the inter-lactation period and in the course of 2-3 months after calving it reaches the stage of physiological readiness for fertilization sooner and embryonic death decreases to 15 percent. Among the trace elements that play a positive role in the reproductive process are iodine, manganese, copper, zinc and cobalt.

The time of calving and the time of insemination of cows and heifers are very important in decreasing the service period and in significantly increasing the dairy productivity of animals. A statistical analysis showed that the calving rate in the republic fluctuates sharply among different enterprises in the course of the year. Most calves are born in December to June. In 1978 65.5 percent of calves were born during this period. During the summer, i.e. during the period that is most favorable for producing large milk yields and for raising offspring, significantly fewer calves are born, resulting in the underproduction of a great quantity of milk and meat.

There is a great drop in calving from June to November. During this period the number of births varies from 5.7 to 6.5 percent of the total herd of [illegible] in a number of rayons (Teleneshtskiy [illegible]) [illegible] during some months of this period [illegible] of the total number of cows gave birth. [illegible] 113 cows calved in [illegible] of February, in Teleneshtskiy [illegible] and [illegible] respectively), in Floreshtskiy--[illegible] [illegible] It is in these rayons that in [illegible] milk per [illegible] [illegible]--295, in Teleneshtskiy--298 [illegible] kilograms, [illegible] the average in the republic [illegible] kilograms.

[illegible] the existing situation with the reproduction of the herd [illegible] increase the number of fertilized cows and [illegible] in the second half of the summer and in the fall [illegible] births in the spring and summer.

[illegible] that the service period of cows is extended [illegible] which results in a sharp drop in fertilization [illegible] energy resources of females in the first [illegible] in the second. The frequency of sampling cows and [illegible] condition and the performance of the fertilization [illegible] the duration of oestrus and the time of the onset of [illegible] depend on feeding conditions and the [illegible] and the season of the year. Thus, the experiment [illegible] dairy complex of the kolkhoz imeni [illegible] showed that during the winter period the duration of [illegible] percent of cows, [illegible] hours in [illegible] percent and [illegible] ovulation [illegible] hours [illegible] percent of the cows and [illegible] hours [illegible] percent [illegible] summer there is a change in that the duration of the oestrus [illegible]

[illegible] data all types of dairy enterprises must organize the [illegible] of animals in oestrus at [illegible]-hour intervals. The best [illegible] morning, before lunch and in the evening [illegible]

[illegible] organization [illegible] revealing the animals in oestrus is an important [illegible] the effectiveness of the reproduction of the herd in [illegible] as well as on kolkhoz and sovkhoz farms. [illegible] that were during the exercise walks of the cows and [illegible] livestock yards [illegible] exercise walks of [illegible] kilometers [illegible] was determined that [illegible] cows [illegible] the exercise walk, [illegible] percent [illegible] [illegible] was determined in [illegible] cows according to external [illegible] livestock yards only [illegible] percent were [illegible] readiness for artificial insemination.

[illegible] walks on the [illegible] insemination was studied at the [illegible] milking. Animals that were taken for exercise walks began oestrus earlier and their rate of fertilization from the first insemination was 16 percent higher in comparison to those animals that were found constantly in facilities.

The most important conditions for raising the effectiveness of artificial insemination in cows is determining the optimal time for insemination. The most favorable period is the middle or near the end of oestrus. At the present time in the republic a number of leading technologists on artificial insemination are performing a single insemination near the end of oestrus with the exception of those cases in which the "immobility" reflex continues into the second day in the cows or heifers. In all large industrial complexes and on kolkhoz and sovkhoz farms during the first time cows should be inseminated at the height or toward the end of oestrus. A repeat insemination (after 12-18 hours) is made of those animals in whom oestrus is continuing. Twenty-four hours after the last insemination the animals are examined for details of ovulation. If ovulation has not occurred, then insemination is again repeated.

The selection of a method for performing artificial insemination is important in the effectiveness of work to reproduce the herd. In our republic the rectal cervical and visu-cervical methods are widespread. The former enables us to increase the effectiveness of insemination by an average of 7 percent.

In order to observe the technology for performing artificial insemination of animals this important operation must take place in points of artificial insemination or in specially-equipped facilities. "Semen material" is very sensitive to temperature. When the temperature of the gametes drops below +18° the effectiveness of insemination also drops sharply. After it is thawed the "semen material" must be used within one-half hour. If it is kept for another 40-90 minutes the fertilization rate of cows drops by 10-28 percent.

It is also very important to observe the herd after insemination. If cows and heifers do not indicate oestrus for 60 days after insemination, a rectal examination for pregnancy must be made. The timely fulfillment of this work enables us to pinpoint the unfertilized animals and to indicate the corresponding measures for curtailing the service period. The pregnant animals are placed in a separate group and then 45-60 days before calving they are placed into the inter-lactation period. Five to seven days before calving they are moved to the birthing section. After the birth it is mandatory to give the cow an early gynecological examination.

The effectiveness of the reproduction of animal offspring depends greatly on the skill of the cadres involved in artificial insemination. At the present time about 17 percent of all technologists working in the republic's enterprises have a higher or secondary special education. The rest have a general secondary or uncompleted secondary education. The latter have undergone short-term courses in rayon state breeding stations, which is [illegible] and for studying the bases of biological reproduction [illegible] artificial insemination of animals. It has become very urgent to [illegible] attention [illegible] to training and retraining these cadres. [illegible] important to morally and materially provide incentives [illegible] [illegible] because they stand guard over the well being [illegible] [illegible] breeding. It is essential for the Moldavian VDNKh [Exhibition of Achievements of the National Economy of the USSR] to annually organize thematic seminars for zooveterinary specialists and technologists on artificial insemination and to propagandize the work experience of the best [illegible] regarding the reproduction of the herd.

[illegible] Izdatel'stvo TsK KP Moldavii, "Sel'skoye khozyaystvo Moldavii", 1978

WAYS TO INCREASE MEAT PRODUCTION OUTLINED

Tashkent SEL'SKOYE KHOZYAYSTVO UZBEKISTANA in Russian No 12,
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[Article by M. Khusanov, doctor of economic sciences and professor at the Tashkent Agricultural Institute, and B. Rakhimov, candidate of economic sciences, docent: "The Main Reserves for Increasing Meat Production"]

[Text] Decisions coming out of the July 1978 Plenum of the CPSU Central Committee defined measures for the further development of agriculture, including the main areas for intensifying animal husbandry. They state that meat production must be increased to 19.5 million tons by the end of the 11th Five-Year Plan. This will make it possible to increase per capita meat consumption.

The decree passed by the CPSU Central Committee and the USSR Council of Ministers "On Measures to Accelerate the Development of Agriculture in the Uzbek SSR" and decisions coming out of the 14th Plenum of the Uzbekistan Communist Party Central Committee, which defined the tasks emerging from this important decree, are of paramount importance in this respect.

Beef and veal account for around 65 percent of the total meat production in Uzbekistan, compared with 42 percent for the USSR. At the same time, the republic's present per capita production lags considerably behind demand.

In order to eliminate this deficiency, it will be necessary to increase the total number of cattle and their productivity considerably. In the future, the number of animals will have to be increased to 40 head for every 100 people, compared with the present 27 head. And we will have to produce 100-110 kilograms of meat (carcass weight) per structural (strukturnaya) head of cattle.

The composition of the herd will have to be improved in order to accelerate the growth rate for the herd and the productivity of the animals. In recent years, cows have made up 25 percent of the herds of kolkhozes, interfarm enterprises, sovkhozes and other state enterprises, slightly more than half the percentage required for intensive operation of the branch.

The elimination of barren cows is one of the requirements for further increasing the herd and the productivity of the stock. In the public sector, no more than 70-75 calves are being born for every 100 cows and heifers over 2 years old, and even fewer on certain farms. Only 57 calves were born for every 100 cows on farms in Dekhkanabadskiy Rayon in 1978, for example, 1.5 to 1.6-fold fewer than on the republic's better farms.

An extremely important meat production reserve lies in increasing the average live weight of the stock. Many farms still have a low figure for this indicator. In 1978, for example, kolkhozes and state enterprises of the Karakalpak ASSR sold cattle to the state at an average live weight of 287 kilograms, Bukharskaya and Dzhizakskaya oblasts, 317 and 329 kilograms respectively; and Kegeyliyskiy and Chimbayskiy rayons, 281 and 282 kilograms.

Many low-weight animals are slaughtered for meat to meet the internal needs of the farms. In 1978, for example, the average weight per head of [illegible] was only 187 kilograms for the republic and a corresponding 161 and 166 kilograms for Samarkandskaya and Surkhandar'inskaya oblasts. This is less than half the weight of animals sold the state.

The July 1978 Plenum of the CPSU Central Committee pointed out the need to increase the live weight of young cattle sold the state to 400-450 kilograms. In order to achieve this, none of the animals should be sold until they have undergone a period of intensive fattening. This will make it possible to obtain an additional more than 25,000 tons of beef for the republic from the same number of animals. And if the average live weight of the animals sold is increased to 500 kilograms, annual beef production will be increased by more than 80,000 tons. The experience of the better farms has demonstrated the fact that with proper raising and intensive fattening, the live weight of cattle can be increased to 600-700 kilograms. For example, on the "Malek" cotton sovkhoz in Syrdar'inskaya Oblast, which raises the spotted-black breed, it was 694 kilograms in 1977 and [illegible] kilograms in 1978. The "Chinaz" sovkhoz in Tashkentskaya Oblast, the [illegible] Experimental Base of UzNIIZh (Scientific Research Institute of Animal Husbandry), and other outstanding farms sell 2-year-old bullocks weighing an average of 650-700 kilograms.

Farms of Syrdar'inskaya Oblast and those of Kalininskiy Rayon in Tashkentskaya Oblast have good average weights, 451 and 492 kilograms respectively.

Accelerating the development of specialized stockbreeding for meat is yet another extremely important reserve for further increasing beef production and improving its quality. Within a brief period of time 21 specialized sovkhozes have been created in the republic, and pure bred bullcalves of the best breeds have been imported from abroad. Sovkhozes and livestock sections of other farms specializing in meat production had 223,000 head of cattle at the beginning of 1979, 17,000 head of which were of the best beef breed. Future plans call for substantially more improvement in pedigree stockbreeding and for an increase in the beef herd.

Mutton and goat's meat are in second place after beef and veal in the republic's total meat production. They account for around 20 percent of all the meat produced, compared with 6.1 percent for the USSR. This level is still considerably below the scientifically established norm for their consumption, however.

The republic has 22.6 million hectares of arid, semiarid, and other types of pastureland suitable mainly for raising caracul and other breeds of sheep, and goats. Progressive experience has shown that the long-range general line for improving the situation in these branches consists of increasing the productivity of this land by flooding, undersowing wild grasses, setting up a pasture-rotation system and creating pasture-protection strips of haloxylon and reserve stocks of feed, and by taking a number of other steps.

We should point out that possibilities and reserves for the further development of sheep and goat raising are still extremely poorly utilized. The total herd of goats and sheep has barely increased over the past 15-20 years, and their meat productiveness is still low on many farms. In 1978, 655,000 sheep and goats were slaughtered for internal consumption on kolkhozes and at state enterprises. The animals weighed an average of 31 kilograms, and only 25 and 26 kilograms respectively on farms of Khorezmskaya and Tashkentskaya oblasts. The average weight of sheep sold the state is also low: 25 kilograms in Khorezmskaya Oblast and 35 kilograms in Namanganskaya Oblast, compared with 42 kilograms for the republic.

The concentration of sheep fattening at specialized enterprises is now a real reserve for increasing sheep breeding productivity. All of the farms in Samarkandskaya Oblast, for example, turn their culled ewes and other sheep over to the Kattakurganskiy Complex for fattening and for the production of persian lamb. In 1978, 69,000 sheep were sold there, a weight gain of 16 kilograms per head was achieved, and more than 24,000 persian lambskins were produced.

Through intensive feeding the live weight of sheep sold the state in 1978 was increased to 41 kilograms from an average of 37 kilograms in 1976, when the oblast did not have a specialized farm.

In addition to this, the degree of preservation of the flock was raised on [illegible] sovkhozes. Before the complex was built, the yearly sheep loss ranged between 4 and 5 percent of the total number, whereas it was less than [illegible] percent in 1978.

The experience of the Kattakurganskiy Complex is presently being applied in other republic oblasts as well. Sheep breeding productivity is rising as a result. Most enterprises now have every opportunity for increasing the average selling weight of caracul sheep to 45 kilograms and that of other breeds, to 50 kilograms.

One important reserve for increasing the production of mutton and other sheep farming products lies in improving the flock composition. Unfortunately, breeding ewes still comprise less than 60 percent of the flock on many commercial farms, compared with the 75-80 percent required for intensive operation of the branch.

Hog raising, one of the quick-producing branches of animal husbandry, has an important role in supplementing meat supplies. Rates of growth of the hog herd have increased in recent years. The number grew from 230,000 in 1965 to 364,600 at the end of 1978. Pork production, in dressed carcass weight, grew by 23 percent during this period as a result.

At the same time, pork production reserves are not being fully utilized so far. Many farms still have a low pig yield per staple sow and a low average live selling weight. It averaged 85 kilograms for kolkhozes and state enterprises in Namanganskaya Oblast in 1978, for example. The average weight of hogs slaughtered for internal consumption has not exceeded 23 kilograms for the republic.

Intensification and conversion of the branch to industrial methods represent the main way to accelerate herd build-up and pork production. At the present time, around one-third of the nation's commercial pork is produced at large specialized enterprises. Weight gains are higher there, fattening periods shorter and production costs lower than on the small livestock sections of kolkhozes and sovkhozes.

Intensification of specialization and concentration in hog production is also continuing in Uzbekistan. Prior to the summer of 1975, for example, 81 kolkhozes and sovkhozes in Samarkandskaya Oblast engaged in hog raising and commercial pork production. The entire herd is now concentrated on 11 farms. Because of this, the productivity of the animals has increased and the industry has come from an unprofitable to a profitable branch.

For purposes of implementing decisions coming out of the July 1978 Plenum of the CPSU Central Committee, it is planned to increase the number of hogs in the republic to 450,000 by 1980 and to increase pork production, in live weight, to 47,300 tons. The bulk of the herd will be located in animal husbandry complexes. Facilities for 54,000 head will be in full operation at the "Sergeli" complex and 108,000 head at the "Galiyabuduk" complex by the end of the 10th Five-Year Plan.

The creation of complexes makes it considerably easier to use food waste in the hog rations. Calculations have shown that republic food industry enterprises have more than 50,000 tons of feed units in the form of waste, the full utilization of which would make it possible to produce more than 8,000 tons of meat, in live weight.

Poultry meat production is increasing rapidly in the republic. A total of 212,000 tons of poultry meat, in dressed carcass weight, was produced in 1978 by all categories of farms. This exceeded the 1965 figure by 2.5-fold. This rapid growth rate was achieved by organizing large poultry farms and sovkhozes. The republic had 36 poultry farms and poultry sovkhozes at the end of 1978. Poultry meat production increased almost 9-fold in the republic between 1965 and 1978, and the amount produced on such farms and sovkhozes grew from 20 to 72 percent of the total.

Poultry meat production lags considerably behind the growing demand, however. In 1978, it was 1.45 kilograms (in dressed carcass weight) per capita in the republic, compared with an average 6.6 kilograms for the nation.

Experience has shown that the development of poultry production for meat, especially broiler production, makes it possible to build up poultry meat production rapidly. Every hen of the poultry breeds produces up to 200 eggs a year, and the broilers hatched from them are ready for use at the age of 7 to 8 months, having reached a live weight of 1.4 to 1.7 kilograms.

The average selling weight of birds at poultry farms has been less than 1.5 kilogram in recent years. The Bukharskaya Poultry Farm imeni 50-letiya SSR and the Sovkhoz imeni Timiryazev in Dzhizakskaya Oblast had good selling weights of 1.3 to 1.4 kilogram for 1978.

In order to accelerate the development of poultry meat production and make it more economically efficient, we must raise only hybrid chickens. And they should be fed fully balanced mixed feed from the very first day. The most effective system is that of raising broilers in cages with specific lighting, temperature and humidity. A farm will not get good results if it fails to meet even one of these conditions.

A considerable reserve for supplementing meat supplies lies in the breeding of horses and camels. We feel that one or two such sections could be set up on every sheep sovkhoz. With good pasturage or intensive feeding, the average live weight of Karabair horses could be brought up to 400 kilograms. And young animals up to the age of 2 years provide the best horsemeat.

Despite the fact that they take so long to mature, baby camels grow rapidly during the first 18 months, only slightly slower than beef calves. They weigh 35 to 40 kilograms at birth, reaching 270 to 280 kilograms at the age of 1 year. The average weight of a grazing camel is 750 to 780 kilograms, and the slaughtered meat yield is 50-60 percent, almost that of cattle.

Rabbit raising is one reserve for increasing meat production. This branch has developed rapidly in recent years. The total number of rabbits on kolkhozes and sovkhozes and at other state enterprises increased 10-fold between 1970 and 1978. They had 65 rabbit-breeding sections with 6,900 does.

A decision adopted by republic party and soviet organs calls for increasing the production of rabbit meat to 1,200 tons and the production of rabbit skins to 800,000 by 1980. In order to accomplish this goal, it is recommended that two or three large mechanized rabbit sections with 1500-3000 does be built in each oblast.

The experience of certain farms has shown that the intensive operation system can turn rabbit breeding into a high-yield branch. The "Kommunizm" kolkhoz in Karshinskiy Rayon, for example, which has a relatively large rabbit breeding section, sold the state 27.8 tons of meat and 15,000 rabbit skins. On the average, the does there produced litters totaling 35 rabbits in 1978, and it is planned to increase this figure to 40 in 1979. A total of 40 tons of meat and 20,00 rabbit skins will be sold to the state. By the end of the year the farm will have 45,000 rabbits, including 1200 breeding does.

It is exceptionally important to accelerate the development of pond fish-farming in Uzbekistan. This has been made more urgent by the deterioration of the Aral, in which the fish catches have dropped drastically.

The total pond fish-farming area has expanded rapidly in the republic in recent years. The total area of lakes and reservoirs was around 28,000 hectares at the end of 1978.

In accordance with instructions issued by the July 1978 Plenum of the CPSU Central Committee, new ponds will be built and old ones restored at Uzbekistan's fish farms. It is planned to place 5,600 hectares of new fish-farming area into operation by the end of the 10th Five-Year Plan.

An extremely important reserve for increasing the fish catch lies in increasing the fish-output per hectare on pond fish farms. The figure is still not above 8-10 quintals on many farms in Namanganskaya, Syrdar'inskaya, Dzhizakskaya and Surkhandar'inskaya oblasts. This is half the republic average. We have every opportunity to improve this figure, since the better fish farming units obtain 50-60 or more quintals of commercial fish per hectare.

Along with all the above, we must take every possible step to increase the number of livestock and poultry and the production of meat and other products on the subsidiary farms of industrial enterprises, the fattening farms of consumer cooperatives and the personal plots of kolkhoz workers and blue- and white-collar workers.

Feed constitutes the material base for improving all of the branches we have discussed. The task of building up the feed base should therefore be the focus of attention for the directors and specialists on all farms and enterprises and of agencies in charge of agricultural production.

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RECOMMENDED PROCEDURES FOR RAISING PIGLETS IN BELORUSSIA

Minsk SEL'SKAYA GAZETA in Russian No 3, Jan 86 p 3

[Article by Yu. Shkunkova, sector head at the Belorussian Scientific Research Institute of Animal Husbandry, candidate of agricultural sciences: "How To Raise Healthy Piglets"]

[Text] The sows must be carefully prepared for farrowing to receive and raise healthy piglets. The rooms they are kept in should be dry and clean with an air temperature of 14-18 degrees. In organizing the sow diet substantial attention should be devoted to the selection of feeds, their quality, and full nutritional value. The diet must be balanced by feed units, protein, amino acids (lysine, methionine, and cystine), minerals, and vitamins according to appropriate norms.

The farrowing must be conducted in warm, dry, clean hog sheds and disinfected stalls. During the first 4-5 hours after farrowing the sow should have free access to water. After 4-6 hours she can be given 600-700 grams of concentrated feed in mash form. The sow is gradually switched to a full diet in the third-fourth days of lactation.

In addition to concentrated feeds the diet of a nursing sow must include root feeds and, primarily, carrots, grass meal up to 10 percent, and skim milk to five percent. The piglets are immediately trained to definite teats of the mother and watched constantly to see that the strong ones do not drive the weaker ones away. The mother's milk is the only source of food for the piglets in the first 3-5 days. The protein of the colostrum enables the piglet to develop passive immunity to many agents of infectious diseases. Piglets that do not receive it die. If the sow has given birth to more piglets than she can feed, the extra ones are transferred to other sows, but only on the second or third day after birth.

For good development the piglets should receive a supplement of a mixture of feeds from the 6-10th days. Specialized farms that raise piglets use the mixed feed formulas K50-8 and K51-8 which are produced at enterprises of the mixed feed industry. Since the second quarter of last year these mixed feeds have been produced with a lower percentage of protein and essential amino acids, lysine and methionine. To prevent a decrease in growth energy and avert the possibility of illness and death, during the first 60 days each piglet should receive a supplement of five kilograms of whole milk and 24 of skim milk. In the first 10 days the milk is given at 50 grams a head a day, then 150 grams in the second 10-day period and 200 grams in the third. ZTsM-1 (whole milk substitute No. 1) figured at 140 grams of dry substitute per kilogram may be used in place of the whole milk. The skim milk is given, beginning with the second 10-day period, in the following amounts: 150, 300, 500, 700, and 750 grams.

During the period when the sows raise the piglets the mortality rate is sometimes 15-20 percent or higher. More than half of the loss occurs in the first 1-5 days of life of the piglets. The primary causes are lack of milk and mastitis in the sows. To prevent these things artificial means of raising the piglets must be organized, and they should be taken from the sows on the second-fourth day after birth.

Piglets can be raised in this way only when certain feeding and maintenance conditions are observed. Piglets being raised artificially are given liquid substitutes from the fourth day of life. In our republic ZTsM-1 may be used for this purpose. Before feeding one part of the dry substitute is mixed in four parts of warm boiled water. This feed is close to sow's milk for content of basic nutrients. In addition to the substitute the piglets are given water. From 10 days of age other feeds are added to the diet in the form of a dry feed supplement, and after 30 days the young pigs are fed on the conventional system.

Anemia is a dangerous illness in piglets and causes death. It occurs because of a shortage of copper and iron in the feed. Therefore, 14-20 days before farrowing the farrowing sows must be injected with 375 milligrams of iron ferrodextrane in the area behind the ears. The piglets themselves must be injected with iron-containing drugs on the second or third day after birth. They are treated again at three weeks of age. Where these drugs are not available a solution of 2.5 grams of ferrous sulphate, one gram of copper sulphate, and 0.5 gram of cobalt chloride per liter of boiled water may be used. The piglets are fed mashed carrots, 10-12 grams of fish oil, concentrates of vitamins A, D_2, E, and B_{12}, and biovit to prevent avitaminosis.

In addition to correct diet, keeping the piglets in clean, comfortable conditions also help raise strong, healthy young animals.

[illegible]
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ORGANIZATION OF BELORUSSIAN HOG RAISING SYSTEM REVIEWED

Minsk SEL'SKOYE KHOZYAYSTVO BELORUSSII in Russian No 11, Nov 79 p 11

[Article by I. V. Nikitchenko, head of the selection center of the Belorussian Scientific Research Institute of Animal Husbandry, candidate of agricultural sciences: "Hybridization in Hog Raising"]

[Text] Every one already knows that the offspring resulting from crossing different breeds of animals have higher productivity. In long-term studies at BelNIIZh [Belorussian Scientific Research Institute of Animal Husbandry], two-breed crossing of hogs has given a hybrid vigor effect of 7.4-9 percent for the reproductive qualities of sows and 2.4-4.8 percent for feeding out characteristics. With three-breed crossing these indexes increased to 15.9 and 10.4 percent respectively, and the profitability of the sector rose to 20 percent.

Wide introduction of these progressive breeding procedures demanded development of a new system of breeding hogs. This system envisions solving a broad range of problems:

a. widespread use of the phenomenon of hybrid vigor at all farms, clear specialization of farms and specialization of production by objectives and designations;

b. transferring breeding advances by pedigreed livestock farms to the commercial farms as quickly as possible, precluding the opportunity for the latter to breed closely related animals. The commercial farms should be supplied by a system organized as follows: breeding plant -- pedigreed livestock farm -- specialized pedigreed replacement stock farm -- replacement farm of specialized farm or industrial complex;

c) two-breed industrial crossing of large white and Belorussian black spotted hogs at pedigreed replacement stock farms specializing in the production of replacement sows and three-breed crossing at the replacement units of specialized farms and complexes to obtain young animals for feeding out;

d) establishing highly productive specialized lines on a purebred and multibreed basis to obtain commercial hybrids which produce weight gains of up to 800 grams with feed expenditures of no more than 3.5 feed units per kilogram.

To achieve these goals a network of pedigreed livestock plants is being set up with subsidiary units in the form of pedigreed livestock farms, specialized pedigreed replacement livestock farms, and specialized farms of industrial complexes to produce two-breed replacement sows.

A breeding center has been formed at BelNIIZh for scientific method guidance of the entire system of breeding work. What is the role given to the pedigreed livestock plants, farms, and replacement farms in this system?

The plants carry on high-level breeding work to improve existing hog breeds and create closed combined lines. They provide all young replacement animals to pedigreed stock farms. The herds at the pedigreed plants are restocked from their own animals. The number of animals at the plants is determined by figuring to receive 3-4 replacement sows from each primary sow.

The pedigreed stock farms supply young replacement animals of the planned breeds to the specialized pedigreed replacement farms. Each of the pedigreed stock farms breeds the same lines as the pedigreed stock plant and serves as a back-up unit. Breeding work is carried on according to a single program. The young animals are evaluated by their own growth energy and turned over to the pedigreed replacement farm. The replacement farm is only permitted to replenish its own herd in special cases. The number of primary sows at pedigreed stock farms is determined on the basis of a ratio of one primary sow at the pedigreed stock farm to 5.4 at the replacement farm.

The pedigreed replacement farms supply the specialized livestock farms and industrial complexes with the crossbred young sows they need. The replacement sows are brought in continuously from one pedigreed stock farm, and the boars come from another (or from the appropriate breeding plant). After assessment for growth energy the replacement crossbred sows are transferred to the specialized [illegible] industrial complexes. The number of primary sows [illegible] replacement [illegible] farms is kept at a ratio of one primary sow for each [illegible] [illegible] specialized farm.

The specialized farms and industrial complexes work on a system of three-breed crossing using assigned programs.

Organizationally speaking, the entire hog breeding system is subdivided into three levels: the republic level, which includes the breeding center and pedigreed stock plants; the oblast level, which has the oblast pedigreed stock farms; and the rayon level, including the pedigreed replacement stock farms, specialized farms, and industrial complexes. The breeding center and pedigreed stock plants make up the Plemtsentr (Pedigreed Stock Center) Science Production Association. The pedigreed stock farms are included in oblast production associations. The pedigreed replacement stock farms and specialized farms or industrial complexes belong to interfarm associations. Rayon pedigreed livestock [illegible] carry on breeding work at them.

The methodology of calculations is uniform for organization of the system at all levels and begins from the optimal parameters of reproduction of the breeding sow herd. As an example, we will give the technique for determining the number of animals in the republic pedigreed [illegible] system. First we establish the number of primary sows at commodity farms. Suppose that the economic plan envisions the production of 315,000 tons of pork a year. If the selling weight of one hog is 110 kilograms, it will be necessary to feed out 2,864,000 hogs to meet the plan. Considering that one primary sow, according to [illegible], can produce 20 piglets a year, the commodity farms must have 140,800 primary sows. Dividing this number by 6.25, we determine the total number of sows at the pedigreed replacement farms. This will be 140,800/6.25 = 22,500 head. The same technique is used to calculate the number of sows that the pedigreed stock farms must have. [illegible] the total number of sows at pedigreed replacement farms [illegible], that is 22,500/5.4 = 4,200 head. Taking into account raising the necessary number of meat-breed boars, the pedigreed stock farms should have [illegible],800 primary sows.

The [illegible] numbers of sows in different farm categories should be [illegible] when calculating both the oblast and rayon elements. In the [illegible], the number of sows is established only for the commercial [illegible] and pedigreed replacement stock farms. For example, assume [illegible] farm plan for sale of pork is 22,000 quintals. To fulfill this [illegible] taking 20,000 hogs at 110 kilograms apiece. This number of hogs can be received from 1,000 sows (20,000/20), that is, the commercial farms will have 1,000 sows. To replace them the pedigreed replacement farms need to have 160 primary [illegible]. This technique [illegible] simple and can be mastered by every spe[illegible]

The introduction of this system of pedigreed livestock work in hog raising has already brought its first results. The Belorussian white hog breed has been developed and the BKB-1 interbreed type created within the large white breed. The animals of these breeds have excellent productive and growth characteristics. They showed the following results in testing: average daily weight gain of 772-778 grams; 3.8 feed units of input per kilogram of weight gain; meat yields of 56.1 and [illegible] percent respectively in carcasses.

The pedigreed livestock plants are working on the development of specialized lines on a purebred and multibreed basis using the following breeds: large white, Belorussian black spotted, Estonian bacon and Swedish Yorkshire. Feedlot hybrids of these lines give a weight gain of 750 grams with a feed expenditure of 3.5 feed units or [illegible] per kilogram of gain and a high meat yield.

During the [illegible] five-year plan the sale of pedigreed hogs has almost doubled and the production of bacon meat has increased two times. Farms have received [illegible] million rubles of additional profit through the difference in prices for pork and bacon hogs. The production of piglets per primary sow has risen 17 percent, and the average daily weight gain in feeding is up [illegible] percent.

In Grodnenskaya Oblast where this system had been introduced most rapidly the proportion of hybrid stock has reached 66.[illegible] percent and economic indexes are up significantly.

Widespread introduction of hybridization in hog raising is one of the important ways to increase the production of hog meat in the republic.

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ECONOMIC ROLE OF TOMSK PRIVATE PLOTS DESCRIBED

Moscow TRUD in Russian 16 Jan 80 p 2

[Article by M. Kozyrev, chairman of the Tomsk Oblast Council of Trade Unions: "Economics of Farm Plots"]

[Text] Tomskaya Oblast is part of the developing Western Siberian industrial complex. The volume of capital investments in the past years of the five-year plan increased 1.4-fold. The extraction of oil is growing at high rates here. A petrochemical combine will go into operation this year, and the woodworking industry and machine building will receive further development.

The growth of industry and the increase in the population of the cities raise the problem of more fully providing the industrial centers with food products. We are striving to satisfy the needs of the people for meat, milk, and vegetables owing to local production. Large complexes are being set up for production of meat and vegetables. To be put into operation this year not far from Tomsk are a complex for pork production with 108,000 head, and a broiler factory with a productivity of 6,000 tons of meat per year, and a hot-house combine with an area of 18 hectares.

This is one aspect of solving the problem. But, while erecting modern industrial enterprises for production of agricultural products, we are not forgetting that the private subsidiary farms of kolkhozniks, workers and employees play an important part in supplying the cities with food products. The oblast's trade union organizations have done a lot for their development, fulfilling the resolutions of the CPSU Central Committee and the USSR Council of Ministers, the RSFSR Council of Ministers and the All-Union Central Council of Trade Unions on this question.

An oblast commission to promote the development of private subsidiary farms has been organized, made up of the deputy chairman of the oblast executive committee, the secretary of the oblast committee of the VLKSM [Komsomol], the chairman of the oblast union of consumers' societies, and the chief state inspector for procurements and quality of agricultural products. Such commissions are operating in all rayons, in the majority of farms, and at enterprises. They see to the allocation of hay fields, of plots for orchards and vegetable gardens, they promote the acquisition of livestock and poultry, and participate in the distribution of mixed feeds. Many of these questions have been reflected in collective agreements with the administration. The oblast council of trade unions singled out one instructor who was to be occupied only with questions of private subsidiary farms. All the organizational work for their development is kept under the constant supervision of the oblast committee of the party.

As the chairman of the oblast commission, it is my job constantly to analyze the effectiveness of the work of the trade union organizations in this direction. This is what the facts say. In 1978 the number of cows in peasant yards increased by 0.3 percent in comparison with 1977. In former years it had steadily decreased.

Of course, the increase is still not great. The main reason is that with the change in the appearance of the villages and the countryside for some of the population there has been a change in attitude toward the farm yard. Previously the peasant did not imagine himself without his own farm, without a cow, a young pig and other fowl. Now the labor of the people in kolkhozes and sovkhozes is becoming regulated, salaries have increased, and the young people do not overload themselves with domestic affairs.

Often the leaders of kolkhozes and sovkhozes have been hostile toward whoever kept his own private plot, they did not try to lighten the cares of the owners of the farm yards, considering that this weakened the interest of the people toward public production. It was necessary with notebook in hand to prove to the residents that subsidiary farming strengthens the family budget, to explain to the chairmen and directors that with the help of the subsidiary farms it is possible to keep personnel in the countryside, that concern about the prosperity of the family on the part of the administration will result ultimately in increasing the interest of the person in the affairs of public production, that we still cannot get along without the private subsidiary farms, supplying the city with food products.

This is why we are happy about even three-tenths of a percent increase in the number of livestock among the public. This is evidence of stabilization, that our work has not been for nothing.

The work for development of private subsidiary farms is especially well set up in Aleksandrovskiy, Kargasokskiy, Verkhneketskiy and Tomskiy rayons. It is possible to mention many farms where the trade union organizations and the leaders show a great deal of concern about strengthening the peasant yards, where they are attaining good results. This is how things stand at the [illegible] Bakcharskiy sovkhoz where there are 78 head of cattle in 400 plots. At the Sovkhoz imeni Lenin the number of peasant-owned cows increased by 30 percent in two years. Here they do not have any trouble fulfilling the plan for purchases of meat, milk and potatoes from the population.

[illegible] efforts in development of collective horticulture and [illegible] gardening are appreciable. The oblast council, jointly with the [illegible] committee, passed a decision which determines the procedure for allocating plots for orchards and vegetable gardens for Tomsk [illegible]. Trade union committees of enterprises and establishments are engaged in this. In the last two years 17 new associations were set up and the old ones were expanded significantly. The total number of plots [illegible]. Almost 100,000 city-dwellers are growing fruits and vegetables. [illegible] horticulturalists not only supply their own families with these, [illegible] and give what they have grown free of charge to children's homes and kindergartens. In 1979, for instance, children's [illegible] received [illegible] tons of vegetables and fruits in this way.

[illegible] and sovkhozes set aside areas for potato planting for the [illegible] Tomsk enterprises. Then they help to work the land. The enterprises and establishments provide their workers with transport for [illegible] the crop grown.

[illegible] not everything is going smoothly as it should be. There [illegible] problems and questions. The bottleneck here is [illegible] purchase of agricultural products from the population. [illegible] gardening associations around the oblast center there [illegible] receiving centers, and these do not operate regularly [illegible] trade in the goods necessary for the needs of [illegible]. The procurement offices of the consumer's cooperative have [illegible] processing the fruit and vegetables, and there [illegible] there are few refrigerated vehicles in the receiving centers.

[illegible] farming zone. There are not a large number of [illegible] in the summer here there is frost in the air. The [illegible] have to have greenhouses and hothouses. Polyethylene is necessary, but it is impossible to buy it in the necessary quantity [illegible] consumer's Societies, Tsentrosoyuz, must render [illegible] consumer's cooperative in the solution of [illegible].

[illegible] development of the work for creation of subsidiary farms of [illegible] enterprises, organizations and establishments--this is one more [illegible] for increasing the production of food products. There is [illegible] of the benefit of subsidiary farms to the oblast [illegible] administration, and the [illegible] supplying their workers and employees with food products [illegible] such examples are isolated. Following the issue of the [illegible] CPSU Central Committee and the USSR Council of Ministers [illegible] many ministries and departments limited themselves [illegible] orders. For instance, the Tomsk enterprises of the [illegible] engineering industry, instrument building means of automation and control systems, and the motor vehicle industry did not receive the necessary resources from the central organizations for carrying out these orders.

Solution of all these problems is an important and urgent task. Needed here is not a formal approach, but ardent interest in providing a richer and more varied table for our citizens.

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AGRICULTURAL MACHINERY AND EQUIPMENT

[illegible] TRACTOR CRITICIZED

Moscow IZVESTIYA in Russian 17 Aug 79 p 2

[illegible]: "Where is the Small Tractor?"

[illegible] Why is the USSR Ministry of Tractor and Agricultural [illegible] Building paying so little attention to the mechani[illegible] [illegible] work in small, home gardens and on private farms

[illegible] years have passed since IZVESTIYA (No 12, 1977) published the [illegible] and the Small Tractor". It was written under the [illegible] Moscow [illegible] exhibition, which was held in the halls [illegible] Moscow. [illegible] great deal of what was on display there was [illegible] the section devoted to gardening equipment [illegible] widely represented there was the [illegible] [illegible] make up for this, the only [illegible] craftsmen were diabolically clever mousetraps, [illegible] specially adapted for spraying trees, and floor polishers [illegible]

The demand [illegible] machinery and implements which facilitate work in private gardens [illegible] Having need of them are kolkhozes and sovkhozes [illegible] millions of people having private plots [illegible] [illegible] is that, as of now, no one is addressing himsel[illegible] [illegible] As far back as 1966 the Ministry of Tractor and Ag[illegible] Building was charged with the responsibility for the de[illegible] [illegible] level of production of garden implements [illegible] their fabrication and of output in the necessar[illegible] [illegible] and quantity, not to mention acceptable quality. The [illegible] and quite specifically. In order to fulfill it [illegible] has been provided the means for organizing a special construction [illegible] the plant in [illegible] with all necessary [illegible]

[illegible] totally [illegible] the latest [illegible] machinery which was supposed to be developed [illegible] experimental breeding stations, experimental [illegible] the small [illegible] to be built [illegible]

The industry's [illegible] plants under the aegis of [illegible] ministries and departments turn out [illegible] gardening supplies of every sort--not to mention tools--but inasmuch as it is for them an insignificant sideline, they are built with low-quality metal having worthless service properties. The service period of many models could not be extended beyond a single season, which has made it necessary to turn out inventory in unjustifiably large quantities.

That issue of IZVESTIYA brought forth a flood of letters which continues to this day. And every one of them is a justifiable reproach to agricultural machine building.

Judging by everything, the thinking in the Ministry is that small equipment can wait, while attention must be given primarily to large-scale, high-speed machinery for general production. It goes without saying that such machinery is actually necessary. But, as the experience of agricultural equipment production in all sectors of our national economy shows, the huge "Kirovian" should not stand apart from its little brother. While, in reality, it turns out otherwise.

Take the [illegible] region of Donetskaya Oblast', from where reader [illegible] writes to us. He informs us that the farm community has as yet never [illegible] itself with production reserves. While expanding the area under crops by developing rough terrain and other previously uncultivated parcels of land, and increasing the capacity of each hectare, the region from year to year increases its field harvest. But has not as yet taken advantage of all of its reserves. Private plots, which account for no less than 4,000 hectares, lag behind here in harvest yield and livestock productivity by comparison with average regional indicators. And 4,000 hectares--that is an entire kolkhoz! The reasons for the lag: neglect of the land, low production [illegible] and difficulty of management.

[illegible], this land is not lying fallow. It bears passable potatoes, [illegible] pumpkins. But here's the rub--having at their disposal up to [illegible] hundred parts of land, the kolkhoz farmers are obliged to purchase a great deal in stores. And if they keep poultry, it is that much more difficult to manage without store-bought feed. Recently, in order to set matters right on their "hundreds," the farmers, in violation of all standards and regulations, have resorted to drilling wells. They are adjusting the water supply. But the difficulties of this are not minor. Many operations are [illegible] out by hand, with vast expenditures of time and physical effort. And the efforts are not always equal. Thus, for one man a garden bears a [illegible] pleasant, while for another--only weeds.

[illegible] it is a simple matter to equip a private plot with effective [illegible]. But is it really not a [illegible]? The letter goes on, and offers an example: one of the residents of the town of [illegible], [illegible]

[illegible] own garden tractor. The resources of the "[illegible]" [illegible] [illegible]. It can plow, cultivate, harrow, plant potatoes and other crops, [illegible] water the garden, irrigate, mow [illegible]. A circular saw, compressor, [illegible], and reaper are hitched to the tractor on one side. [illegible] "[illegible] a drilling mechanism to the tractor at present, and, at the [illegible] special blade for soil grading."

[illegible] a garden tractor is convenient to use, straightforward, and [illegible]. Its dimensions: length—180 centimeters, width—110, height—80 centimeters. Power—4.5 HP. It employs the ZID-4.5 motor which operates on [illegible]. It has eight forward speeds and two reverse. Speed is from three [illegible] kilometers. The midget tractor can be successfully put to use not only on private parcels, but hothouse farming, the small fields of experiment stations, and in city parks.

The [illegible] of the midget tractor, Ivan Gavrilovich Ovcharenko, is no [illegible], but a fully contemporary, highly qualified specialist—a [illegible] engineer and computer technician of the regional association [illegible] who ponder the matter—let us have enough of these [illegible] will affect the appearance of an extra kulak [illegible] in the rayon," the [illegible] continues, "and how many such rayons are there in the country?"

[illegible] at such length on this example in order to pose the question to [illegible]: What do you propose? The tractor, "[illegible]" [illegible] Ivan [illegible] from the town of [illegible] Oblast' writes concerning this: "After [illegible] correspondence on this problem, the knowledge came to light that [illegible] in the city of [illegible] had begun to put out small tractors. The [illegible] sent me its specifications, and it seems that the tractor does not [illegible] attachment, but only a rotary cultivator, which is not suitable [illegible]. It is ever thus! And its price is 2,200 rubles. Such a [illegible] the tractor's features nor its possibilities."

[illegible] after seeing a single magazine photograph of the small tractor manufactured by the association, "[illegible]". But, in the [illegible] signed by the general director, V. [illegible], the standard [illegible] given them: "In light of the fact that our enterprise is not spec- [illegible] the output of agricultural equipment, the development for the [illegible] of the product in question has not been authorized. We have com- [illegible] the experimental mode. At the present time, documentation on [illegible] has been forwarded to a specialized institute, and the ques- [illegible] is being decided within the appropriate organizations."

[illegible] mini-tractors have gone through three modifications at [illegible] tractor plant as well. In the opinion of the plant's chief engineer [illegible] the third model with a five horsepower engine is the most [illegible] tractor can operate with attachments for mowing, [illegible] harrowing. It can even pull a trailer with [illegible]. The cost of the machine is around 800 rubles. This, of course, is [illegible]. But the models still remain in experimental forms, [illegible] testing is concluded.

the small tractor is needed as soon as possible.

About two and a half years ago, we received from the Ministry of Agricultural Machine Building a reply signed by the Assistant Director of technical control, [illegible]. He wrote:

"In regard to your publication of the article, "The Home Garden and the Small Tractor," we wish to inform you that the Ministry of Agricultural Machine Building is implementing organizational-technical measures directed at hastening the creation of domestic standards for methods of small-scale mechanization in 1977-1980; specialization of the production and assignment of individual machines outside of organizations and enterprises of the Ministry of Agricultural Machine Building is being detailed; discussions are being held with foreign firms with the aim of borrowing foreign technology; the question of establishing control-model plots and a number of other measures is being considered.

"As regards the joint resolutions with the USSR Ministry of Agriculture drawn up at the behest of the USSR Council of Ministers on the issues raised in the magazine, detailed information will be forwarded to you in August of 1977."

In August, there was no information. Not long ago, we met with Deputy Minister, N.N. Tarasov, showed him our correspondence, and learned that the matter of the garden implements "had moved away from dead center." This movement is expressed in the fact that base organizations of the Ministry are studying (come on, you read this!) the possibility of market demand and need, analyzing the production capabilities of other departments, and rendering technical assistance to them. A common inspection procedure has been established for documentation and test models, which provides for the participation of the Central Union of Consumer Societies, and confirmation from within the Ministry of Agricultural Machine Building.

Each year, ministry organizations participate in republic and interrepublic fairs, as well as regional exhibitions and shows. This spring, for example, an all-union exhibit of gardening implements, handcarts, and spraying apparatus was held in which the level and quality of 650 models was examined. As in the past, no less than 170 plants, but not 36--as before--but 50 ministries are concerned with releasing these items.

According to Deputy Minister N.N. Tarasov, the assortment of goods has been expanded, and their quality improved. The volume of products released has also grown significantly. For three years of the 10th Five-Year Plan, it increased by [illegible] percent. The Ministry of Agricultural Machine Building directly provided [illegible] percent of the overall output.

Regarding the production of mechanized implements--their output, as in the past, is held back by the lack of small-scale power sources (electric motors, internal combustion engines, compressors, generators, storage batteries, etc.

Well, how are things going with the little tractors and their attachments—those items for which millions and millions of people are waiting? It turned out that there is no wholesale buyer. And, in the Ministry of Tractor and Agricultural Machine Building, they are apprehensive about finding a market for such a small tractor. It seems that right now they are inquiring about it, they are demanding it, but are they beginning to buy it? The price is really not all that low.

They will begin. And this matter is not limited to the letters which were cited above. Our Minsk comrades conducted an inquiry which showed that in the very first year in their republic alone 10 to 12,000 such tractors could be sold. Kolkhozes and sovkhozes will take them, particularly in areas outside the Chernozem zone. They can organize maintenance stations for catering to private plots. But, in order to turn out small tractors at the Minsk plant, a special shop, 12-13,000 square meters in area, equipment and trained personnel are needed... But, the means to this end are not provided by the Ministry.

Consequently, if the Ministry of Agricultural Machine Building does not change its position, tractors specially designated for the working of small plots will not be forthcoming in the foreseeable future. The mission assigned to it so many years ago has come to naught. It is time for this violation of state discipline.

But in the meantime, the "[illegible]" is being turned out all the same. And who is taking it? Only the builders. They buy up the entire yearly production run of [illegible],000 machines and use them very extensively for...routing floors inside buildings and transporting small-size loads. In agriculture, this machine has not quite gained acceptance. And I learned this, not from builders, but at the Ministry of Agricultural Machine Building, which is indifferent to where its products go.

So what kind of promises are they making in the Ministry, if only for the future? Intended for initial release in [illegible] is a four-wheeled tractor with cabin, priced at around 3,000 rubles and designated for kolkhozes, sovkhozes, experiment stations, training brigades, and public utilities. And, if in time machine-rental stations are indeed able to be organized, the ministry people calculate that those engaged in private agricultural pursuits and owning garden plots will be able to lease such tractors.

As we see, the perspective is long-range. Moreover, no one has calculated whether [illegible] construction will allow for small, private gardening plots.

Those in the Ministry of Agricultural Machine Building have taken a strange position. We are dealing with [illegible] [illegible], they attempt to [illegible] [illegible] personal gardening by kolkhoz workers, laborers and [illegible] workers, forgetting that it is one of the most important [illegible] [illegible] [illegible] development of productive resources. It is, of course, [illegible] [illegible]. But, can the chance is it written in the new Constitution of the [illegible] that the state and the kolkhozes render assistance to the citizens in the conduct of personal agriculture." It is the direct responsibility of the Ministry to rigorously adhere to this position. And this is a matter not of desires, but of requirement.

Concerning the references to the lack of productive plots, shortcomings of metal, etc., a much more mature approach to the problem is found in the numerous letters from readers. In them, it is pointed out that we put out a million boat motors even as we argue for clean water in rivers and lakes; a million motorcycles, on which young folk uselessly ride day and night, disrupting the peace. One actually needs motorboats and motorcycles. But, for the majority, oars and bicycles would be much more useful. The idled plants could then more sensibly turn out mechanized equipment for small gardens. We have equal need of refrigerators, sewing machines, vacuum cleaners...

And it is high time this was understood.

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AGRICULTURAL MACHINERY AND EQUIPMENT

SMALL GARDEN TRACTORS IN THE UKRAINE

Kiev PRAVDA UKRAINY in Russian 25 Aug 79 p 1

[Article by M.V. Sidel'nikov: "The Small-Scale Tractor"]

> [Text] Kolkhoz and sovkhoz workers with access to private garden plots are very much in need of light equipment and various garden implements. I would like to know what steps are being taken to make such machinery and supplies available.
>
> M. Korolev,
> Zhitomirskaya Oblast

> Replying is a member of the board, chief of technical control for the Ministry of Tractor and Agricultural Machine Building, M.V. Sidel'nikov.

The design organizations and institutes of our branch have in recent years developed more than 100 denominations of gardening implements, and the greater half of these have already been put into serial production.

The Kutaisi small tractor plant is currently turning out the universal garden tractor, "[illegible]," with a 6.5 horsepower rating and an assortment of accessories and attachments.

Right now, a new tractor is under development--it will be lighter, more maneuverable and adaptable. Work is also going forward on developing a single-furrow plow, cultivator and other attachments for the new tractor.

[We] have already adjusted the production output of portable electric sprayers, garden cultivators, electric hedge trimmers, etc.

[In order] to increase the output of these machines, the Ministry has provided expansion of the Kutaisi tractor plant's capacity in the next Five-Year Plan.

I wish to further inform you that at the Kutaisi tractor parts plant and at the Klimov agricultural machinery plant of the Ministry of Machine Building for Animal Husbandry and Feed Production, preparation is underway for serial production of power mowers, adapting a motor from the gas-powered saw ("Druzhba"). The width of the mechanism's cutting area is one meter. Release of these mowers will begin as early as this year.

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AGRICULTURAL MACHINERY AND EQUIPMENT

BRIEFS

MULTIPURPOSE COMBINE--Khmel'nitskiy--The local thermoplastics products plant has begun turning out a special multipurpose unit for performing operations in private garden plots. Specialists at the L'vov central technological design bureau took part in its development. With the aid of the multiapplication unit, rural dwellers can carry out a full range of operations right on their own plots. The new machine slices root crops, chops straw, husks corn, and grinds grain. The plant has dispatched the first lot of universal combines to the commercial sector. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 6 Dec 79 p 1] [illegible]

PRIVATE FARMING PRODUCTION--Grodno, 8 Dec (TASS)--Each private auxiliary farm in Grodno Oblast [Oblast] provides milk now for its operators and one additional city family. Rural residents have sold to the state a quantity of valuable products sufficient to provide for the yearly requirement of a city of half a million inhabitants. This is one and a half times more than was projected for the current year. The relative importance of the milk sold to the public in the overall volume of their purchases approaches 16.3 percent of that total in the oblast. Moreover, produce storage facilities this year received from auxiliary farms close to 13,000 tons of meat, about 50,000 tons of potatoes, and a great many vegetables and fruits. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 9 Dec 79 p 2] 9481

EXPERIMENTAL GARDEN TRACTOR--Minsk--A motorized unit for mechanized operations in garden plots has been developed by design engineers of the Minsk tractor plant. Its range of mounted attachments include a plow, harrow, hiller, mower and semi-trailer. In the current year, the enterprise will turn out the first experimental production run of tractors for use under the conditions found in the republic. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 23 Mar 79 p 4] [illegible]

STRUCTURING SOWN AREAS TO MAXIMIZE FEED CROP PRODUCTION

Moscow SEL'SKOYE KHOZYAYSTVO ROSSII in Russian No 12, Dec 79 pp 22-25

[Article by A. Klep[illegible]ov and V. Shkirya, senior scientific associates of the Siberian Scientific Research Institute of Feeds: "The Structure of Sown Areas and the Effectiveness of Feed Crop Production"]

[Text] It is possible to solve the problem of creating a solid feed base that meets the present-day requirements of animal husbandry, but only on the basis of the scientific organization of it. It assumes the observance of rational feeding of livestock and poultry, the setting of optimum proportions of fodder resources and the correct combination in the structure of sown areas and natural feed land resources. Much depends also on proper planning. During recent times planning has been ever more based on mathematical methods with the use of computers. The application of mathematical statistics promotes an improvement in the system of analysis and planning of feed crop production and its proper organization. One can trace all this by observing the example of the kolkhozes and sovkhozes of the Barabinskaya Forest Steppe in Novosibirskaya Oblast.

Nearly a third of all sown areas have been assigned here to fodder crops in the over-all structure of areas sown with agricultural crops. The largest relative share--half of the fodder field--is occupied by silage crops: corn and sunflowers. At the same time, the gross harvest of coarse feeds (annual and perennial grasses) in the zone is not great and constitutes 15 percent of the total volume of their production when recalculated in terms of fodder units. An analysis shows that during individual years, the yield of fodder units from a hectare of arable land would range from 490 to 915 kilograms. This bespeaks great fluctuations in the yield of feed and cereal fodder crops. A comparison of the average square deviation and coefficients of variation in the yield of feed crops shows that the corn for silage and green forage has the strongest deviation over the years (V = 37.01 percent). The sunflower is substantially more stable in terms of yield under the conditions in Baraba. If the average square deviation of corn amounts to ± 6.01 quintals of fodder units from a hectare, then that of the sunflower is ± 5.95. The variation in yield of feed and cereal fodder crops is graphically presented in Table One.

Table [illegible]

Crops	Average yield, in quintals of fodder units/hectare	Average square deviation, in quintals of fodder units/hectare	Coefficient of variation, as a percentage (V)
Corn for silage and green forage	16.29	± 6.04	37.01
Sunflowers for silage	16.88	± 3.95	23.44
Annual grasses for hay	4.67	± 1.71	36.62
Perennial grasses for hay	4.65	± 1.55	33.36
Oats	9.88	± 3.55	35.96
Barley	9.66	± 4.31	44.58
Peas	8.35	± 4.24	50.74

The perennial grasses (V = 33.36 percent) are the most stable of the grasses used for hay, while oats is the most stable of the cereal fodder crops. Barley (V = 44.6 percent) and peas (V = 50.7 percent) are unstable in terms of yield. By comparing the indicators obtained, we come to the conclusion that crops react differently to weather conditions in certain years. However, this provides an opportunity to maintain the stability of the volume of the gross harvest of feeds, since, in the case of unfavorable conditions for one crop, the shortage of feeds can be compensated for by virtue of another crop. Thus, if you raise only corn, whose yield is unstable, then one might fail to obtain a substantial quantity of silage in certain years. By combining it then with sunflowers, the gross harvest of feeds will be more stable. The average square deviation in this case is equal to ± 3.78 quintals of fodder units per hectare, while the coefficient of variation is 50.6 percent. Thus, it is possible to obtain a stable harvest of crops by virtue of a rational combination of crops sown. But in order to do this, it is necessary to establish which correlation of crops can ensure the greatest yield of output.

With the aim in mind of determining the proportional share of each crop in the over-all average annual harvest (in terms of the yield of fodder units per hectare) depending on weather conditions, the production function of the average yield of all feed crops of the actual yield of each taken separately has been worked out. As the result of calculations on a computer, the following equation was obtained: $Y = -0.33 + 0.149x_1 + 0.175x_2 + 0.013x_3 + 0.773x_4 + 0.117x_5 + 0.051x_6 + 0.242x_7$, where Y is the yield of all feed crops.

By analyzing twin correlation coefficients, it is possible to see which of the crops is suitable for other crops and to what extent for obtaining the highest harvest yield (Table Two).

Table Two

Crops (all crops)	Barley	Corn	Sunflowers	Annual grasses	Perennial grasses	Oats	Peas
Corn	0.221	1	-0.060	0.228	0.352	0.486	-0.036
Sunflowers	-0.094		1	0.028	-0.211	-0.089	0.297
Annual grasses	0.146	-	-	1	0.333	0.476	-0.203
Perennial grasses	0.329	-	--	-	1	0.613	-0.083
Oats	0.488	-	--	--	--	1	-0.016
Barley	1	--	--	-	-	--	-0.061
Peas	-	-	--	-	-	-	1

More often than not the planned yield of fodder from a unit of area serves as the initial indicator in the practice of planning for the fodder base. For this calculation it is better to use the following equation: $Y = (1.69y)_1 + (1.790y)_2 + (0.384y)_3 + (0.461y)_4 + (0.927y)_5 + (0.955y)_6$ [etc] $+ (0.030y)_7$, where: $(K_ny)_n$ represents unknown yields of individual crops (in quintals of fodder units). In our example this represents yields of: $(K_1y)_1$ — corn, $(K_2y)_2$ — sunflowers, $(K_3y)_3$ — annual grasses converted into hay, $(K_4y)_4$ — perennial grasses converted into hay, $(K_5y)_5$ — oats, $(K_6y)_6$ — barley, $(K_7y)_7$ — peas, K_n — regression coefficient.

From here it is not difficult to compute the yield of various cereal fodder and feed crops. Thus, for instance, in order to obtain 20 quintals of fodder units per hectare on the average, it is necessary to provide in the plan for a yield of corn of up to 33.8 (20 x 1.69) and annual grasses of up to 8 (20 x 0.384) quintals of fodder units per hectare, and so forth.

The subsequent stage in the work is that of conducting an evaluation of the influence of the structure of the sown areas of feed crops on the stability of the gross production of feeds. For this, different variants for its structure were calculated with the help of a computer, while the best variant with the least variation in the gross harvest was revealed. The effectiveness of such work has been more graphically presented in Table Three. And so, with one and the same area of arable land, but with a different structure in the sowing of crops, it is possible to increase the gross production of feeds. In our example, their increment amounted to 500,000 quintals of fodder units on the average per year. If, in conjunction with this, you take into account the fact that the variation under the actual structure amounts to 23.6 percent, while under the calculated structure it amounts to 21.4 percent, then the increment in feeds will amount to nearly 9 percent. By virtue of this, [illegible] additionally more than 400,000 quintals [illegible] further improvement in the structure of the sown areas promotes [illegible] in the effectiveness of feed grain production.

[illegible]

[illegible]	Average yield for 1966-1977, in quintals of fodder units/hectare	Area sown with crops, in thousands of hectares	Gross production of fodder, in thousands of quintals	Estimated variant: Area sown with crops, in thousands of hectares	Estimated variant: Gross production of fodder, in thousands of quintals
[illegible] green fodder and silage	16.21	184.6	3,000	191.0	3,164
[illegible] for silage	16.8[illegible]	[illegible]	1,38[illegible]	71.6	1,26[illegible]
[illegible] grasses (recalculated [illegible] hay)	[illegible].68	69.[illegible]	327	[illegible]	[illegible]
[illegible]	[illegible].60	69.[illegible]	13[illegible]	39.[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	31[illegible]	[illegible]	[illegible]
[illegible]	8.31	11.[illegible]	[illegible]	26.[illegible]	23[illegible]
[illegible] per [illegible]	10.31	56[illegible]	564[illegible]	56.[illegible]	[illegible]

[illegible] great reserve for livestock breeders is to be found in the proper ratio of feeds [illegible] the rations given to animals. The ration must meet two most important requirements: the biological requirements of animals in terms of [illegible] nutritious substances and they must be economically justified. [illegible] rations for cows with a daily productivity of 6 to 1[illegible] [illegible] of milk for the farms of the Barabinskaya Zone (Table Four).

[illegible] practice under production conditions at the Zdvinskiy [illegible] Zdvinskiy Rayon and at the Sibir' Kolkhoz in the Tatarskiy [illegible] Novosibirskaya Oblast. This has enabled us to recommend a [illegible] concentration model for the feeding of dairy cattle, with the following [illegible] in the winter ration: from 27 to 30.5 percent of silage, from [illegible] percent of concentrates and from [illegible] to 20.[illegible] percent of [illegible] productivity of the animals. As a result [illegible] the Barabinskaya Zone have succeeded in lowering the over-all [illegible] of feeds by [illegible] to 10.[illegible] percent and the production cost of milk [illegible] and in raising the productivity of cows by 11 to 1[illegible] percent. [illegible] during the period when the proposed rations were checked, a [illegible] 11,[illegible] rubles was obtained.

Table (Cont)

Feeds	Daily yield of milk with a fat content of 3.8 percent, in liters					
	6	8	10	12	14	16
Concentrated feeds, including grass meal, in kg	1.9	2.3	3.0	3.6	4.4	5.0
Silage, in kg	16	19	20	22	23	25
Hay (cutting), in kg	2	3	3	3	3	3
[Senazh, hay*], in kg	5	6	8	9	10	12
Straw, in kg	5	4	2	1.5	1	—
Phosphorus feeding, in grams	35	40	47	40	45	50
Salt, in grams	50	50	70	70	100	100
Containing in the ration						
Fodder units, in kg	7.6	8.8	9.8	10.8	11.6	13.6
Digestible protein, in grams	710	840	1010	1140	1230	1380
Calcium, in grams	60	65	80	85	93	100
Phosphorus, in grams	30	35	40	45	54	60
Carotene, in milligrams	360	416	480	545	566	676
Dry substances, in kg	12.5	12.5	13.4	14.5	14.8	15.7
Nutritional value, in a percentage						
Concentrated feeds	22.5	25.6	27.6	30.0	33.0	34.5
Silage	30.5	30.3	30.0	29.5	28.0	27.5
Hay	13.2	13.6	12.2	11.2	10.0	9.5
Straw	13.2	9.5	4.1	2.8	1.7	—
Senazh	20.6	21.0	26.1	26.5	27.3	28.5

In conclusion, we would like to note that, in practice, the planning of the fodder base with the help of economic-mathematical methods and computers during the shaping of the plan and determination of the demand for feed is not infrequently limited simply to the determination of fodder units and digestible protein. Meanwhile, this is not enough. When accomplishing the tasks entailed in seeking a minimum of material and monetary expenditures, it is necessary to take into account not only these indicators, but also other elements of feeding, for otherwise mistakes might be allowed to occur in determining the optimum structure of sown areas.

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[illegible] AND [illegible] TECHNOLOGY

[illegible] WINTER [illegible] WORK, [illegible] PROBLEMS

[illegible] PRAVDA in Russian [illegible]

[illegible] "Farmers' Winter Care"

[illegible] in the last month of winter [illegible] and most complex time [illegible] kolkhozes and sovkhozes [illegible] preparations for spring field work are in full swing [illegible] of the harvest and of success for the whole agricultural year [illegible]

[illegible] increased material and technical resources, working people in the countryside and enterprises serving the countryside have outlined [illegible] for a substantial increase in the productivity [illegible] farming and livestock raising, for higher [illegible] the fulfillment of the plans adopted by the [illegible] everywhere. In order to achieve the [illegible] to mobilize all [illegible] effort and resources [illegible] agricultural production and [illegible]

[illegible] is the paramount concern. There [illegible] more important task [illegible] completing wintering successfully [illegible] maintaining [illegible] must be [illegible] most attention on the proper maintenance of [illegible] rational use of fodder. The correct action has been taken [illegible] of all fodder [illegible] to the last kilogram [illegible] The rational use of fodder [illegible] to ensure this. Kolkhoz and sovkhoz leaders and specialists [illegible] their work, [illegible] the actual situation [illegible] and take vigorous measures aimed at increasing livestock [illegible]

[illegible] of increasing grain [illegible] This year grain growers [illegible] considerably [illegible] it is necessary to work most [illegible] an improvement of the structure of the [illegible] plan, for example [illegible] fertilizers [illegible]

The problem of increasing fodder stocks and improving their quality is no less urgent. Concern must be shown for it right now. Life shows that those kolkhozes and sovkhozes which have devoted particularly great attention to the production of coarse and succulent fodder and to its timely procurement and correct storage succeed in insuring nourishing wintering. Similar experience exists in the majority of the country's regions. It is now a question of disseminating it more widely, overcoming the elements of carelessness which exist in places and really tackling the production of hay, silage and cured hay. Extended sowings of peas, soybeans and alfalfa are also yielding good results. Party organizations and farm leaders and specialists are called upon to create in collectives an equally interested attitude to the production of fodder as to that of grain.

Increased efficiency must not be forgotten. On a number of farms investments are not accompanied by a proper increase in production. On every kolkhoz and sovkhoz it is necessary carefully to analyze the state of the economy in the spirit of the demands of the CPSU Central Committee November (1979) Plenum, to disclose reserves and bottlenecks and to outline specific measures to improve the use of capital investments, land and other resources. Experience has proved that returns increase where emphasis is placed on improving productivity and work quality. Increasing efficiency is the concern not only of economists but also of agronomists, animal experts, engineers and all rural working people. And this work must be performed constantly and purposefully.

The fate of the harvest depends both on farmers and on those who produce equipment and fertilizers and who store and process the harvest. This is why during these prespring days communists of industrial enterprises and of procurement and other organizations must place the fulfillment of the countryside's orders under special control. It is necessary to explain to people how great is their share of labor in increasing production of grain, meat, milk and other produce. The editors continue to receive reports that certain chemical plants already owe farms thousands of tons of mineral fertilizers this year. And yet every ton could make it possible to obtain additionally more than 1 ton of grain. Party committees and people's controllers must call strictly to account those who wreck plans and violate state delivery discipline.

The tasks of party organizations are crucial. It is their duty to perform active political, educational and organizational work, insuring the mobilization of all forces to successfully complete livestock wintering, to prepare for sowing and to fulfill the pledges. It is important to assert a militant mood in collectives, to develop still more widely the competition in honor of the 110th anniversary of V. I. Lenin's birth and to make fuller use of moral and material incentives. A great deal depends on the personal stand of every communist. It is the duty of party members to head the competition, to help comrades practically and with advice and to set an example in labor. Their entire strength, experience and skill must be directed toward increasing production in every possible way and strengthening the farm economy.

On inclement winter days a good, exacting word about the affairs of rural workers is particularly important. Press organs, radio and television are urged to give daily coverage of progress in livestock wintering and of preparations for sowing. It is the duty of journalists and writers graphically and passionately to tell of people employed in livestock sections and workshops. It is necessary to give all possible support to and to disseminate the experience of progressive collectives, to react promptly to shortcomings and to criticize laxity and indifference. Unfortunately, there are frequent instances where issues of certain newspapers are published without articles dealing with life on kolkhozes and sovkhozes or their production activities. Such practice is inadmissible. The mass news media, including the urban press, must widely show the tremendous efforts of party committees and all Soviet people to strengthen the agrarian sector of the economy.

Every day brings the start of field work closer. Rural working people are preparing to greet fully armed the spring of the concluding year of the 10th Five-Year Plan. They are fully resolved to fulfill and overfulfill their plans and pledges, to gather a high harvest and to give the motherland more produce from the fields and livestock farms.

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